# ENGINEERING NEWS-RECORD

FEB. 7, 1957

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**An on-the-spot report:**

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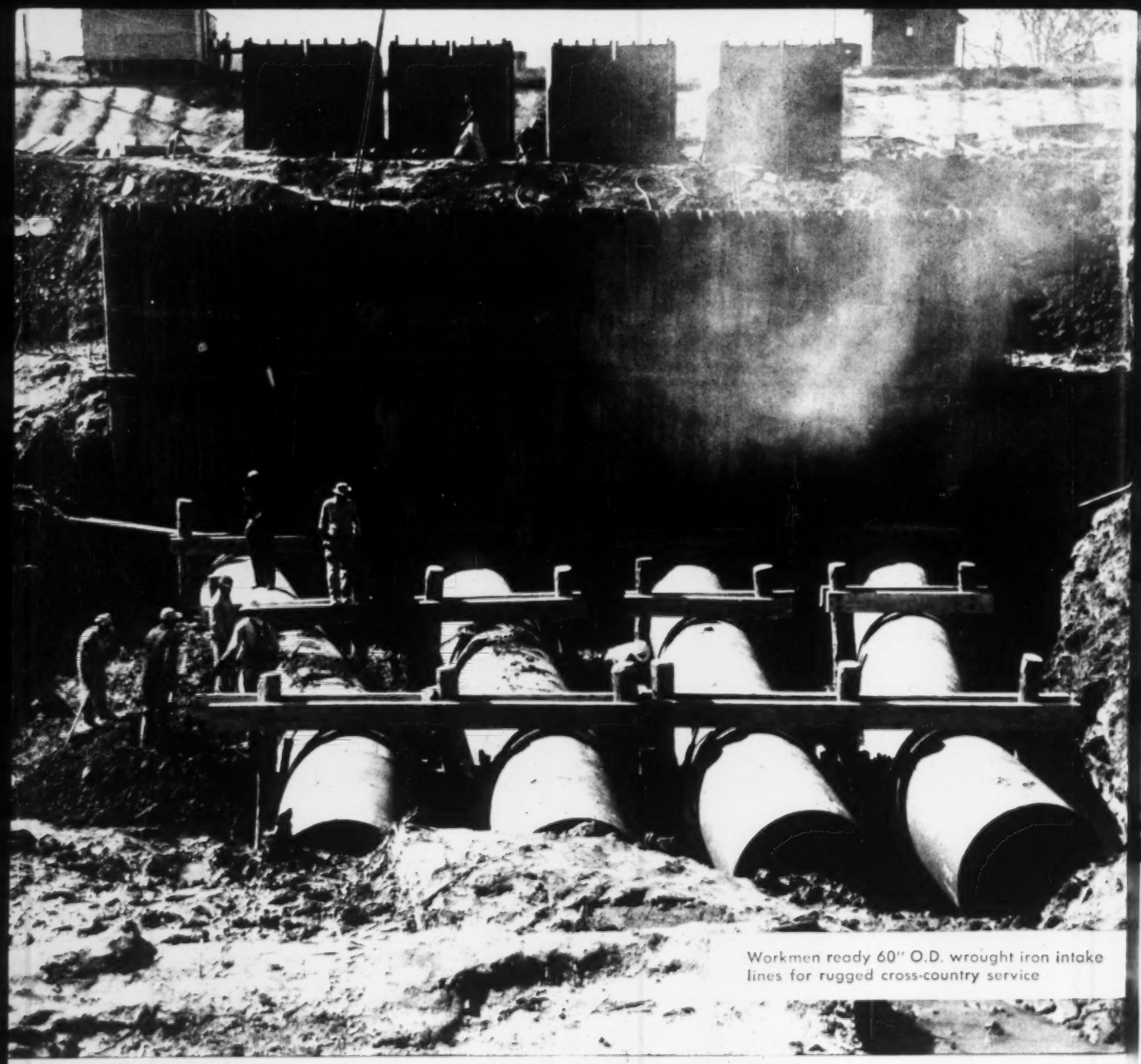
A McGRAW-HILL PUBLICATION



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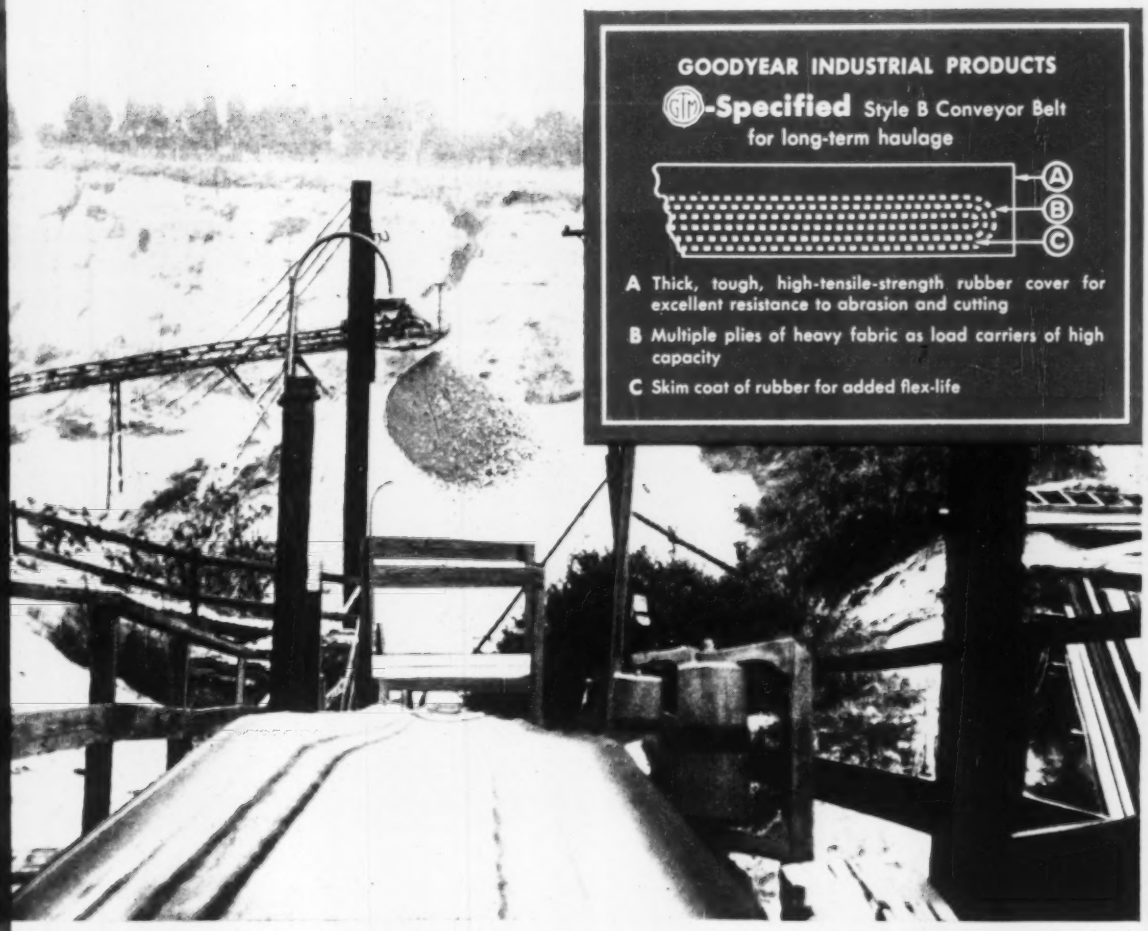
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G.T.M.-Specified Style B Conveyor Belt
for long-term haulage
A
B
C
A Thick, tough, high-tensile-strength rubber cover for excellent resistance to abrasion and cutting
B Multiple plies of heavy fabric as load carriers of high capacity
C Skim coat of rubber for added flex-life

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Lifting 8-inch rock—at 350 tons an hour—up 125 feet to the crusher-mouth proved a belt-breaking job at this California quarry. Under the great weight, previous belts soon stretched beyond use. All failed in less than 4 years.

Then the G.T.M. – Goodyear Technical Man – made a recommendation: high-tensile-strength Style B Belt, constructed to resist abrasion and stretch under heavy loads. His belt lasted *twice* as long as its predecessor—with far less time out for adjustment. Its great success prompted the replacement of every other belt in the plant with Goodyear belts.

And that's only one of many problems where the G.T.M.'s solution has been a big time- and money-saver. To tap this knowledge and experience for *your* business, contact him through your Goodyear Distributor or write:

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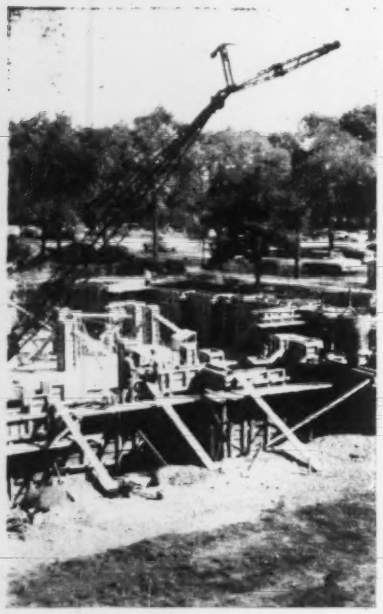

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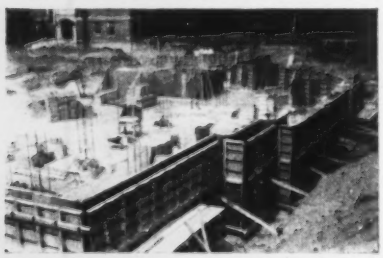
Forms may be rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. B-7, Chicago 39, Illinois.

Fred Berglund & Son, Inc., Chicago, Illinois, general contractor for St. Scholastica School job.



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**31 YARDS HEAPED—24 YARDS STRUCK • 518 H.P.—ALL WHEEL DRIVE**
**TORQMATIC DRIVES—NO CLUTCH—FULL POWER SHIFTS**

Here's a one-man earthmoving spread that moves more yardage at lower cost than any other scraper. It incorporates all of Euclid's scraper design features—hydraulic lever action, a low, wide, easy loading bowl, the 4-section cutting blade that's reversible and adjustable, and unequalled accessibility for servicing.

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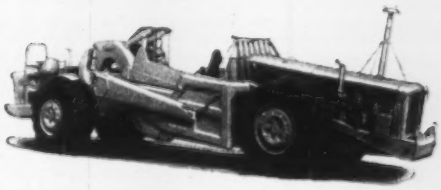

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When you're semi-skidding heavy bucket-loads of material over rough terrain, and the skid-shoes contact a high spot abruptly, linkage isn't pounded—and your spine isn't mauled! *Shock-swallowing Hydro-Spring takes over. No pain—no strain!*

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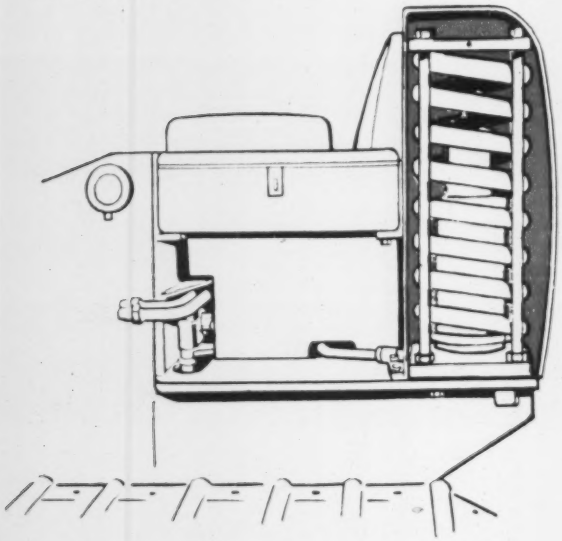

### How patented Hydro-Spring increases equipment life and capacity

Exclusive International Drott Hydro-Spring is a hydraulic cylinder enclosed in a heavy-duty *locomotive-type* coil spring. Shock force displaces oil from main lift cylinders into the Hydro-Spring cylinder—extending it and compressing the big spring to absorb and cushion impact loads.

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**Try Hydro-Spring, turned on and off,** to prove a vital money-making difference between International Drott and unprotected front-end loaders! Measure the job-getting, yard-adding advantages of exclusive triple-power, pry-action break-out and other International Drott exclusives. And see how you can beat a fleet of limited-duty rigs with an *exclusive* Four-In-One. See your International Drott Construction Equipment Distributor for a demonstration.

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# ADDING,

# swallowing Hydro-Spring

## frame-mauling, spine-smacking impact!

When you solidly set the Skid-Shovel or Four-In-One in tough material to apply famous bucket-heaping, pry-action break-out, you don't punish the equipment, or yourself. *Shock-swallowing Hydro-Spring takes over—intercepts "slam-bang" bumps!*

When you're using the Four-In-One in dozer position and plow into tough material like this hard-frozen soil, you don't overload hose connections with a tooth-jarring crash. *Shock-swallowing Hydro-Spring "gentles" trouble-causing forces by two-thirds, or more.*

When you dump a bucketful of rock in one sudden clatter, don't brace for a bump, or expect something to break loose. *Shock-swallowing Hydro-Spring cushions impact, thus cuts time loss, and practically eliminates hydraulic hose failures.*

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# THE NORTHWEST 35 TON TRUCK CRANE

**A NEW NORTHWEST TRUCK CRANE** — the 41 TC makes possible the selection of just the right Northwest machine on rubber to suit your job.

Here is a unit that, like all Northwests, is aimed at producing the maximum results profitably, steadily and at minimum cost. The 41 TC brings you all of the proved Northwest advantages — advantages that have made money for Northwest owners. And, it brings you more! — New features that you will be interested in finding out about.

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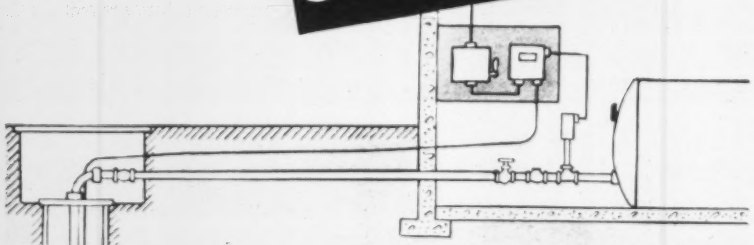
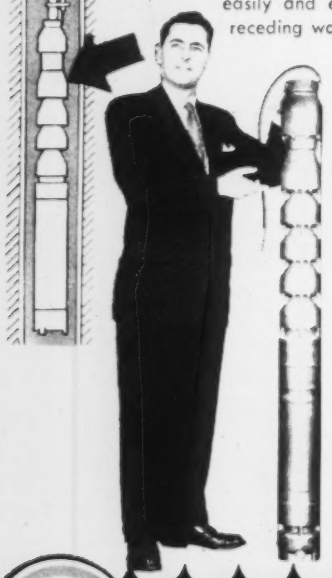


Here's a commonsense pump for any plant that depends on a deep well water supply. The SUMO SUBMERSIBLE employs a time-tested design backed by over 30 years experience in the manufacture and application of submersibles, exclusively.

Pump and motor — coupled together as a unit — operate inside the well, underwater. No pump house is needed.

Water delivery is obtained by *pushing* — not by suction. Since the water is under pressure, there are no priming problems. Shaft alignment troubles, common to pumps in which the motor is surface mounted, are eliminated.

What's more, the SUMO SUBMERSIBLE can be quickly, easily and economically set deeper to compensate for receding water levels.



**Information every plant engineer should have . . .**

*Bulletin B-1000* provides a comprehensive description of the SUMO SUBMERSIBLE PUMP—and its many advantages as a basic water supply pump for industry.
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## Reader Comment

### Welded Girders in Europe

SIR—The article describing the longest welded girders in the U.S. (ENR Nov. 1, 1956, p. 45) prompts me to add that the world record for girders of the single web type is probably set with 289 ft by the Pont de l'Arche over the Seine River, fabricated and erected by our company, Entreprises Metropolitaines et Coloniales, in 1954.

This structure with five spans 180, 279, 289, 279, 180 ft, is considered also the longest European bridge with all-welded continuous girders. It is built on a skew, and to improve its appearance no stiffeners are used on the exposed side of the outer girders.

G. R. THALHEIMER
*Civil Engineer*
*Paris, France*

(Editor's Note—The U.S. bridge referred to is on the New York Thruway and has a span of 234 ft. A 270-ft welded girder was later used in Houston by the Texas Highway Department, ENR Jan. 24, 1957, p. 48.)

### Rolled-Beam Depths

SIR—Mr. Goodkind's suggestion for deeper rolled beams (ENR Jan. 3, p. 6) is a challenge to our rolling mills. However, the lack of depth of American rolled wide-flange beams can be overcome by:

(a) Designing for composite beam action with properly designed shear anchors.

(b) Prestressing the concrete deck longitudinally and transversely, particularly for negative moments at supports.

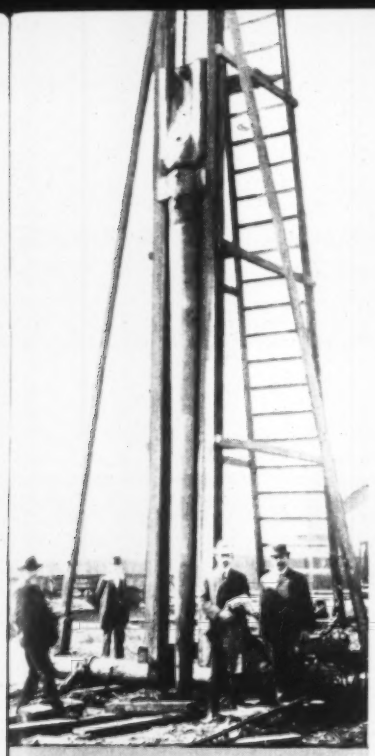
(c) Welding or riveting cover plates to top and bottom flanges.

(d) Improving the quality of the steel and increasing the allowable stresses.

As to the sizes of rolled beams in Europe, the largest available wide-flange beams are 100 cm deep or approximately 40 in., and they are certainly not common. 42-in. beams are not rolled in Europe.

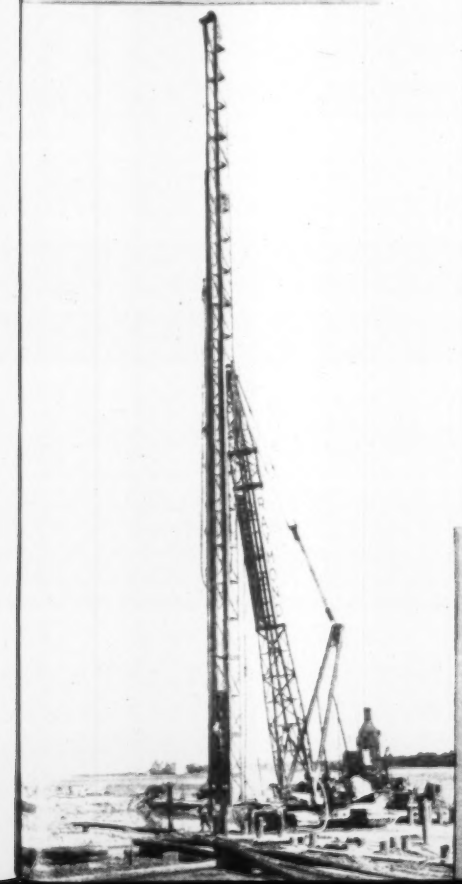
There is a need for a new shape with a narrow, thin top flange and a wide,

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



One of Raymond's earliest pile drivers at work in Chicago at the turn of the century.

On the job in Detroit, Michigan in 1956 with one of Raymond's newest and largest drivers—a 186′ rig.



# *Our 60th year...*

RAYMOND
CONCRETE PILE COMPANY
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On the occasion of the sixtieth anniversary of the incorporation of our Company, the management wishes to salute and express appreciation to the thousands who have permitted us to serve them during this period.

On January 20, 1897, the Raymond Concrete Pile Company was incorporated. Since that time, it has executed 13,052 construction contracts and 23,013 soil investigating contracts. Of these 36,065 contracts, 34,707 have been domestic and 1,358 foreign.

The curve of volume continues upward. This is due to the confidence of the thousands who use our services and products. For this recognition, we are truly grateful and very genuinely register our thanks.

We assure you that it is our aim to ever maintain the confidence that has been evidenced by your patronage.

G. F. Ferris
President

Maxwell M. Upson
Chairman of the Board

## RAYMOND

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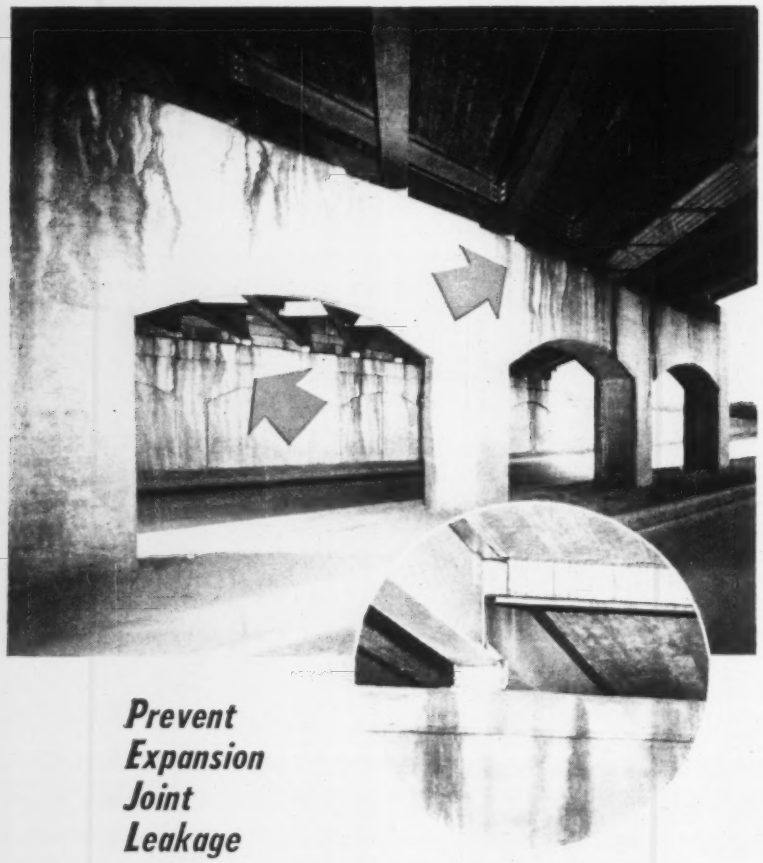
*140 Cedar Street, New York 6, N. Y.*

**FOUNDATIONS FOR THE STRUCTURES OF AMERICA**
**COMPLETE CONSTRUCTION SERVICES ABROAD**



**Prevent Expansion Joint Leakage**

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Even the most modernly engineered and constructed bridges are vulnerable to costly repairs and maintenance. If moisture is allowed to infiltrate through the expansion joints, bearings and other load bearing members will soon rust out as in the picture above.

Allied JET SEAL is the perfect solution to this problem. It is extremely rugged and long lasting . . . has superior qualities of adhesion, cohesion, resilience and ductility at low temperatures. Allied JET SEAL has no cold flow tendencies even at temperatures in excess of 300 F., giving assurance that it will not drop out of vertical construction joints.

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Brantford, Ontario (Canada)

## . . . Reader Comment

thick bottom flange. It would be ideal for composite beam action. By thinning the upper flange and enlarging the lower flange, a great deal of steel can be saved.

This shape has been suggested by European engineers but to my knowledge has not been rolled as yet.

FRANK D. STEINER
*Associate Design Engineer*
*Pacific Gas & Electric Co.*
*San Francisco, Calif.*

### The "So-Called" Shortage

SIR: Mr. John Kneiling's letter appearing in your Dec. 27 edition sums up the feeling of every engineer I have talked to on the subject of the so-called engineer shortage.

In my opinion even a moderate depression will find a rightful number of engineers looking for work. The current waste of engineering talent is most serious indeed, and until industry recognizes engineering as a profession and pays for it as such, no relief will be forthcoming in spite of mountains of propaganda.

V. R. JACKSON
*Houston, Tex.*

### A Good Week's Work

SIR: As you know, we have a contract with the New York City Board of Water Supply for a portion of the West Delaware Tunnel (ENR Sept. 27, 1956, p. 50).

Our crew at the Cannonsville Intake drove 368 ft during the week of Dec. 3, 1956. The roof for the entire length was supported by roof bolts and roof ties. J. C. Mathis is our superintendent.

CRANCY O'DELL
*Project Manager*
*Drake-Grafe-Winston-Econ-Conduit*
*East Branch, N. Y.*

### CALENDAR

**Eastern Snow Conference,** 14th annual meeting, Onondaga Hotel, Syracuse, N. Y., Feb. 7-8.

**National Society of Professional Engineers,** spring meeting, Hotel Francis Marion, Charleston, S. C., Feb. 15-16.

**American Society of Civil Engineers,** winter meeting, Jackson, Miss., Feb. 18-22.

**Association of Asphalt Paving Technologists,** annual meeting and technical session, Atlanta Biltmore Hotel, Atlanta, Ga., Feb. 25-27.

**American Concrete Institute,** 53rd annual convention, Statler-Hilton Hotel, Dallas, Tex., Feb. 25-28.

# Euclid Scrapers and Crawlers are your best investment

## Overhung engine type Scrapers of 7, 12, 18 yds. struck capacity

Powered by engines of 143, 218 and 300 h.p., these scrapers have heaped capacities of 9, 16 and 25 yds. Advanced design of Euclid's hydraulic lever action, low bowl and 4 section cutting blade provides fast, easy loading. The 18 yd. model has Torqmatic Drive . . . all have NoSpin differential and Euclid planetary drive axle . . . unequalled accessibility of the power train and major components.

## TC-12 Twin-Power Crawler

A completely new concept in tractor design and performance, this Euclid Crawler has two 218 h.p. engines for a total of 436 h.p. There is a separate Torqmatic Drive for each track. Top speed is 8 m.p.h. —change from one speed range to another or to one of the three reverse speeds is made under full power. Planetary drives can be serviced without removing track, frame or drive sprocket. Operating weight, bare, is 62,500 lbs.

## Four-wheel Tractor Scrapers

These 12, 18 and 24 yd. scrapers have maximum stability for rough roads and high speed hauls. At 3:1 slope heaped capacities are 14, 20 and 27 yds. A 200 or 218 h.p. engine with 5-speed transmission powers the 12 yd. scraper . . . drive tires are 21.00 x 25 with 24.00 x 25 optional. The 18 yd. scraper has 300 h.p. with 3-speed Torqmatic Drive . . . standard tires are 24.00 x 25 with 29.5 x 25 optional . . . a 17 yd. bottom-dump is interchangeable with the scraper. The 24 yd. scraper has a 300 or 335 h.p. engine with 4-speed Torqmatic Drive and 27.00 x 33 tires . . . 33.5 x 33 drive tires are optional equipment.

## Twin-Power "Euc" Scrapers

These scrapers have capacities, struck, of 18 and 24 yds. — heaped at 3:1 slope, 21 and 27 yds. Both models are powered by two engines, each with Torqmatic Drive, and have 27.00 x 33 tires with 33.5 x 33 optional. The Model TS-18 has a total of 436 h.p. Tractor of the Model TS-24 has a 300 h.p. engine—scraper wheels are driven by a 218 h.p. engine—a total of 518 h.p. "Twins" outperform other scrapers by a wide margin—they self-load and work under conditions that stop other scrapers.

***Your Euclid Dealer will be glad to provide information on the complete line of "Euc" Rear-Dumps, Bottom-Dumps, Scrapers, and Crawler Tractors***

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

# Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

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# Two NEW BIG BONUS International

## *with fast-loading, dirt-heaping, clean-*

Now...all the advantages of famous International scraper design are available in two new towed scrapers—to turn big International crawler power and traction into *big-bonus yardage.* The new 20 cu yd heaped 4S-85 is matched in weight and capacity with the giant TD-24 to pile up profits on the fill. The 14-yard heaped 4S-55 is a cycle-speeder behind TD-18 heavy-duty pull!

Turn on International crawler power with one of these new scrapers—and watch the dirt boil in freely—compact itself into corners—build up an extra-yardage heap. These new scrapers have *flush-smooth* bowl interiors for *flow-easy* dirt action. You've never seen such fast, easy, big scraper loading! And outside-mounted apron arms insure super-speedy, load-trapping apron action!

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*Study the extra yard-getting features* of these new big-capacity scrapers from the new balanced, easy-hitch tongue to the big-target push-block. Ask your International Construction Equipment Distributor for a demonstration.

INTERNATIONAL HARVESTER

# INTERNATIONAL® Construction Equipment

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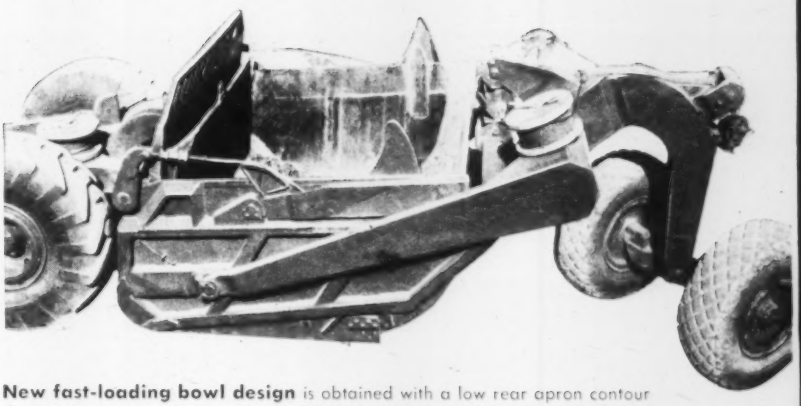
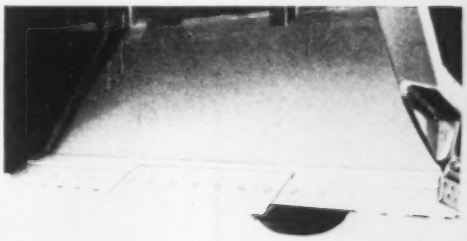
A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks



**New fast-loading bowl design** is obtained with a low rear apron contour that gives positive, built-in dirt-boiling action under all loading conditions. Even the wearbars protecting tilting floor hinge are blended into cutting edge bed—to insure smooth dirt flow!

**New cutting edge,** where boiling action begins, consists of three equal-length, completely *interchangeable* and *reversible* sections. This design simplifies your parts inventory! And the cutting edge depth can be quickly changed to three different positions to match soil conditions and increase loading efficiency!



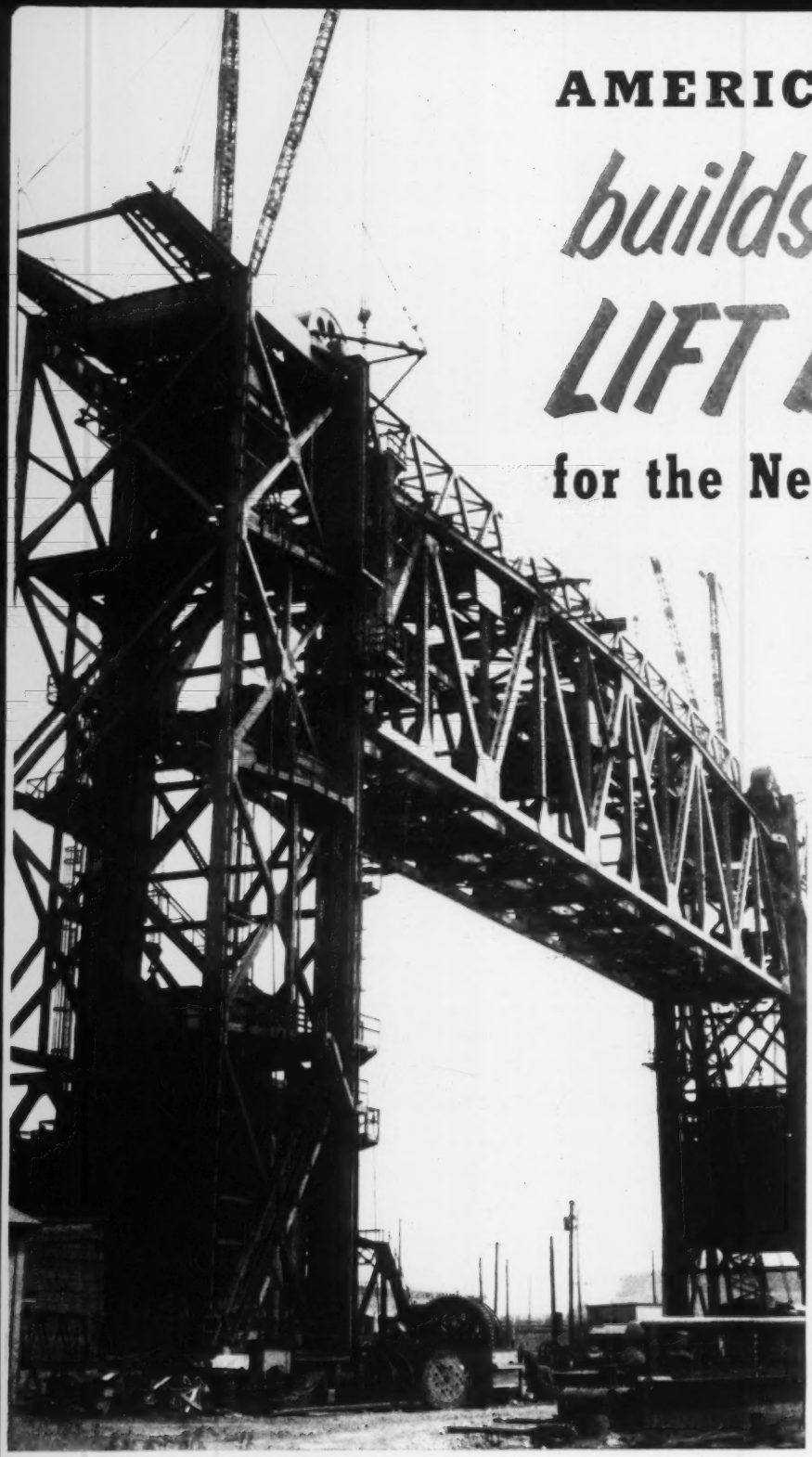
# YARDAGE
# Scrapers
## *dumping design!*

**Exclusive power-saving double ball bearing sheaves** maintain correct sheave alignment—provide increased cable and sheave life in these new scrapers. Below, it's the new 20-yard model "85" International scraper being self-loaded by a TD-24 crawler.

**BRIEF SPECIFICATIONS:**

| Model | Recommended Tractor Size | Capacity Struck | Capacity Heaped | Capacity (with Sideboards) Struck | Capacity (with Sideboards) Heaped | Shipping Weight (Approx.) |
|---|---|---|---|---|---|---|
| 4S85 | TD-24 | 16 | 20 | 19 | 22 | 37,200 |
| 4S55 | TD-18 | 10 | 14 | 12 | 15 | 26,360 |

**Controlled, even spreading** is accomplished by positive, power-saving roll-out ejection. High-lift apron, opened by ejector, eliminates excessive sheave travel and complicated reeving. All four axles of these new scrapers are individually replaceable, to minimize downtime, reduce repair expense! Below, the model "55" and TD-18 on the fill.



# AMERICAN BRIDGE builds another LIFT BRIDGE for the New York Central

Spanning the Cuyahoga River in Cleveland, this modern lift bridge replaces an old swing span structure which had been in continuous use since 1890. It is the third major lift bridge to be fabricated and erected by American Bridge for the New York Central System in recent years. Last year, we completed the new Harlem River Bridge in New York for the same railroad, and early in 1955, we completed another lift bridge across the Cuyahoga River in Cleveland.

Designed by the engineering firm of Howard, Needles, Tammen & Bergendoff, this new structure consists of a double-track thru-truss vertical-lift span 265′ long; a cable-support span (truss type) 265′ long and surmounting the vertical-lift span; and two double-track thru-truss tower spans, 30′ long x 35′ wide x 162′ high.

The trusses in the lift span are 33′ apart c. to c., and 50′ high at center (trusses have curved top chords). Each truss is composed of ten 26′-6″ panels.

In addition to the fabrication and erection of 3,065 tons of structural steelwork for this project, the American Bridge contract included installation of operating machinery, electrical equipment, engine-generator sets, machinery house equipment, counterweight framing, concrete counterweights with reinforcing steel, gratings, wire ropes and fittings, tower sheaves with shafts and bearings, and removal of the old swing bridge.

Many railroads rely upon the know-how, the facilities, and the experience of American Bridge to handle the most difficult construction problems.

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# AMERICAN BRIDGE

UNITED STATES STEEL

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# the new 30-B

### MODERN, PROVED DESIGN

The 30-B offers you proved, advanced design features that have made Bucyrus-Erie crane-excavators outstanding performers on all types of work.

*Parts are simple, generous in size,* few in number — with plenty of strength for dependable service without unnecessary weight to reduce working efficiency.

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*Loads are distributed properly* between upper and lower works by six conical hook rollers — two equalized pairs in front and two singles in rear. Precise machining, heat treating and flame hardening provide smooth rotation and long life.

*Special greasing system,* with remote control located at operator's position, for greasing swing pinion and rack; grease fittings grouped to save time.

### TAILORED TO YOUR NEEDS

*Choice of crawler mountings* — five different sizes of crawlers and treads to fit requirements. Also, Transit Crane on rubber-tired carrier.

*Power and drive options* — crawler-mounted 30-B offered with gasoline, diesel (direct or torque converter drive) or single motor electric power.

*Transit Crane* — gasoline or diesel, 35-ton capacity.

*Five front ends* — both crawler machine and Transit Crane fully convertible to shovel, dragline, clamshell, crane, dragshovel.

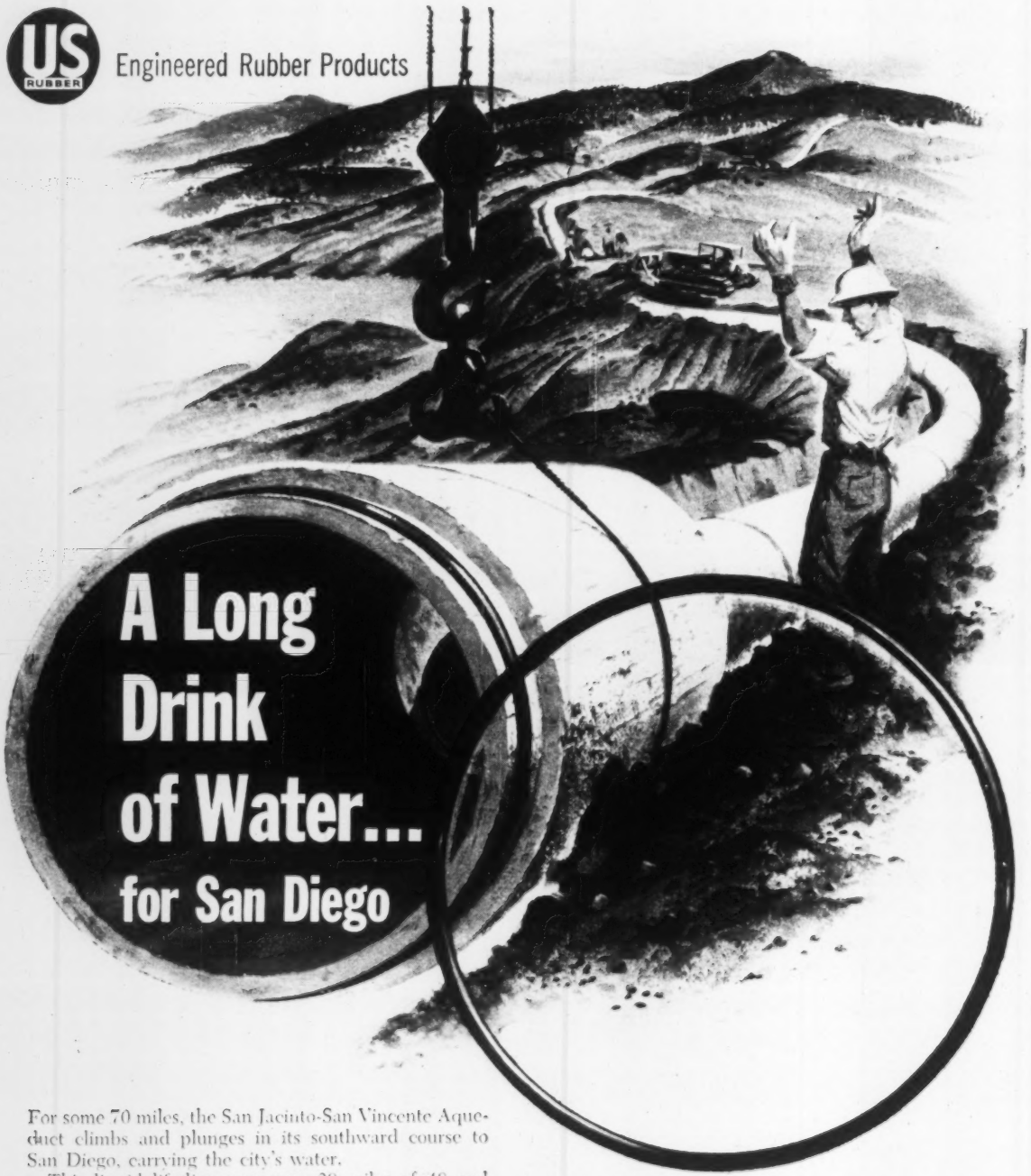
*Extra equipment for special jobs* — includes various-length crane booms and jib extensions, independent propel, third drum unit, cathead, power controlled lowering on main hoist line.

Let your Bucyrus-Erie distributor give you all the facts on the all-new 30-B, show you why it is the *right* machine for your job. See him soon — or write for complete details. 318E57C

## BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

Engineered Rubber Products



# A Long Drink of Water... for San Diego

For some 70 miles, the San Jacinto-San Vincente Aqueduct climbs and plunges in its southward course to San Diego, carrying the city's water.

This liquid life-line uses over 28 miles of 48 and 54-inch reinforced concrete pressure pipe equipped with steel joint rings.

These steel joint rings—about 8,500 in all—are sealed with U. S. Rubber round gaskets, made by the unique process of *continuous molding*. This process is exclusive with U. S. Rubber. Continuous molding produces the only seals that provide minimum compression set, precise tolerances (down to .008 if needed), and long life—all at reasonable cost.

This continuous molded gasket is only one of thousands of examples of how "U. S." experts engineer rubber and plastic parts in mass-production—yet at exacting tolerances. For your next construction job, contact any of the 28 "U. S." District Offices or write us at Rockefeller Center, New York 20, N. Y. In Canada, contact Dominion Rubber Co., Ltd.

Mechanical Goods Division

**United States Rubber**

# ENGINEERING NEWS-RECORD

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# THE CONSTRUCTION WEEK

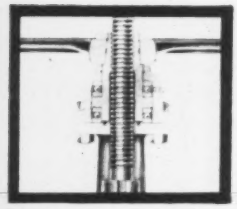
**ACRE LIMIT LOSES**—By a 4 to 3 decision, the California Supreme Court has ruled the 160-acre limitation in Bureau of Reclamation irrigation contracts to be invalid under California law. The State Attorney General intends to petition the court for a rehearing and if this fails he is likely to appeal the ruling to the U. S. Supreme Court. Under the limitation, no irrigator can water more than 160 acres. Californians generally feel the decision, if upheld, will have far-reaching effects on federal water projects in the state. The suit to test the acreage limit was begun in 1949 by the Ivanhoe Irrigation District.

**GUIDANCE PAYOFF?**—Engineering enrollments in colleges in the U. S. set a new high last fall according to tabulations released last week. They jumped 13.8% over 1955 while total college enrollment increased only 8.3%. The engineering freshman class totaled 77,738, an increase of 6.7% over 1955. Total freshman enrollments were up 4.9%.

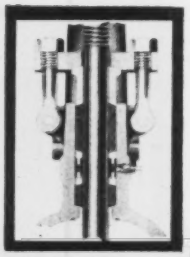
**SEAL OF APPROVAL**—At its winter meeting in New York last week the board of the American Water Works Association approved in principle a plan for certification of manufactured waterworks products. The idea—and it reportedly has enthusiastic support of manufacturers—is to license a producer to use an AWWA seal on his product. The proposed seal would include the number of the AWWA specification met by his material. Such certification would be good for any item covered by AWWA specs and would be an extension of the service of specification writing, a major work of the association.

**CONSTRUCTION WAS THERE TOO**—The newspaper headlines last week said "Oil, Bank Leaders at Banquet to Saud" in reference to a dozen private business executives invited to a 60-place formal White House dinner in honor of the visiting Saudi Arabian king. But construction was well represented in the persons of Stephen D. Bechtel and Harry W. Morrison, presidents of the leading companies bearing their names. Their presence would indicate that it takes more than bankers and oil men to get the black gold out of Arabia.

**PLAYGOERS' MECCA**—Five theaters in one circular building—plus a sixth in another—will be a focal point for theatergoers in New York City if plans announced last week by Roger L. Stevens, New York real estate man and theatrical producer, materialize. Designed by Pereira & Luckman, Los Angeles architects, the project will occupy a site in the Lincoln Square urban renewal area (ENR Jan. 19, 1956, p. 110). The five stages in the 180-ft-dia main building will be grouped around a core containing a truck elevator and backstage facilities. Two of the theaters will be among the largest in the city, seating 1,288 persons each.

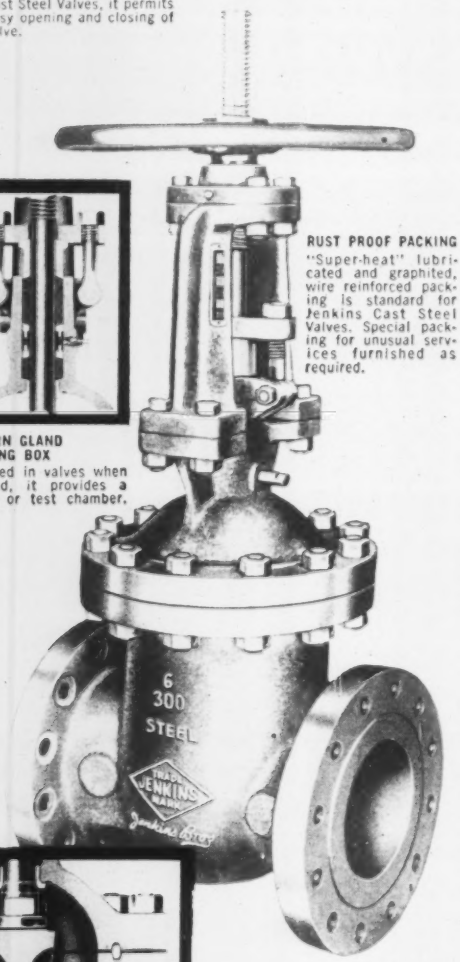


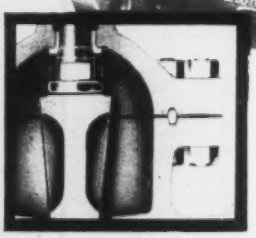
**BALL BEARING YOKE SLEEVE**
Standard on larger sizes of all 300, 400, and 600 psi Cast Steel Valves, it permits easy opening and closing of valve.



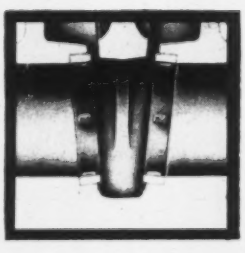
**LANTERN GLAND STUFFING BOX**
Furnished in valves when specified, it provides a cooling or test chamber.

**RUST PROOF PACKING**
"Super-heat" lubricated and graphited, wire reinforced packing is standard for Jenkins Cast Steel Valves. Special packing for unusual services furnished as required.



**STEEL RING GASKET**
All 400 and 600 psi Valves are furnished with soft steel ring joint body-bonnet gasket, fitted into accurately matched grooves, assuring a lasting, vapor-tight joint.



**THROUGH PORT GATE DESIGN**
Wedge lifts out of flow when valve is full open, permits free, unobstructed flow.

for design features that deliver
top-rated efficiency . . . lasting economy

# JENKINS CAST STEEL VALVES

The details shown are only a few of the many design features developed by Jenkins valve specialists to make Jenkins Cast Steel Valves a match for the most punishing requirements of higher pressure, higher temperature services.

You can get the required combination of casting alloys and seating metals for services up to 600 psi — 1000°F. With any valve specified, you get the *plus* of Jenkins *extra value*, — in performance, in lasting economy.

Compare every feature, and you'll see why Jenkins Cast Steel Valves are first choice for so many systems planned for lowest operating cost.

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| **PATTERNS** | Gates 2" to 24" — Globes 2" to 10" — Angles 2" to 10" — Swing Checks 2" to 12". Non-return, stop and check Globes and Angles, 4" to 10" Screwed, Flanged, or Weld Ends |
| **PRESSURES** | 150 lb. — 300 lb. — 400 lb. — 600 lb. |
| **PRESSURE CASTING ALLOYS** | Carbon Steel — 150 lb. Valves<br>Carbon Molybdenum Steel — 300, 400, 600 lb. Valves<br>Chromium Molybdenum Steel (when ordered) |
| **SEATING METALS** (in various combinations) | H Monel<br>13% Chromium Stainless Steel<br>Carbon Molybdenum Steel, Stellite faced<br>AISI Type 316 Stainless Steel |

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It describes all patterns, casting alloys, and seating combinations, with details of the *extra value* design and construction features. Gives pressure-temperature ratings, dimensions, and other technical data. Get a copy from your Jenkins Valve Distributor, or write: Jenkins Bros., 100 Park Ave., New York 17.

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# WASHINGTON OBSERVER

**You may be getting a tax break on some of your deductions** for machinery and equipment soon. The Internal Revenue Service wants to put into effect a revised and updated edition of its "Bulletin F"—the guide-book used by the man who checks your tax return in determining whether you've taken too large deductions for annual depreciation of your plant and equipment.

**The 67-page bulletin gives the tax-life of all kinds of equipment.** The present one specifies these, for instance: portable rock crushers, 8 years; bulldozers, 8 years; chain hoists, 6 years; pneumatic riveting hammers, 3 years; and so on.

**Idea of the revision is to bring actual life of equipment** into line with what Bulletin F now suggests, and to incorporate into the booklet new equipment that's not now listed.

**In all cases, the IRS man makes the decision** as to whether your variation from the Bulletin F is acceptable. You can write off equipment faster—and get larger deductions—if the particular job you're on actually wears out equipment more rapidly than the ordinary run of jobs.

**Businessmen and their tax lawyers want to see the revision used**—but at the moment it's stymied by an internal squabble over appointment of a committee to hear from businessmen their suggestions for changes and additions to the version that officials have drawn up. Treasury higher-ups are now trying to make up their minds on this.

•

**Personnel recruiting costs of defense contractors** are getting a going-over at the Pentagon. An inter-service group—representing Air Force, Army and Navy—is under Congressional order to set some reasonable standard on costs that can be charged off to hiring engineering and technical help.

**Construction contractors will feel it** although they are not considered the "worst offenders" of what, up to now, has been an extremely flexible rule of reason. An example of why the services are going to crack down: In one year, an aircraft company spent $907,500 on help-wanted ads and other recruiting expenses. This cost was borne by the Navy, for which the firm was producing planes. In that year, the plane manufacturer hired only 193 new engineers and other technical employes, and it lost 134 for a net of only 59 gained. This made the average recruiting cost about $18,000 per employe, explaining why the Pentagon is under Congressional pressure to do something.

•

**Support for only minor loosening of credit for housing** is the best that industry can expect from the Administration any time soon. Most recent evidence of government policy: Chairman Raymond J. Saulnier of the Council of Economic Advisers told Congress that there should be no general easing of credit, but that some aid might be desirable for housing. He advised state and local governments to lift ceilings on interest costs to draw more money for public construction.

**Meantime, applications for FHA mortgage insurance** are still down. A new report on December applications shows that bids were the lowest in more than a decade. January should show a rise, but not an appreciable one.

•

**Watch for a showdown on a quick buildup of atomic power plants** when the Joint Committee on Atomic Energy opens hearings Feb. 19. The hearings, required by law, are designed to bring Congress up-to-date on AEC's progress in developing non-military atomic programs.

**The Democrats already have introduced a bill backing their plan for $400 million** of government-built atomic electricity plants. This is the so-called Gore Bill which passed the Senate last year, and lost in the House by a narrow margin. AEC chief Strauss thinks his new programs make it easier for him this year to beat back the public-power proposals of the Democrats.

# Always replace a HYATT with a . . .

# HYATT

WHY? In the first place, it's easier and quicker to install another HYATT Hy-Roll than another make. You're sure of a perfect fit—because HYATT Hy-Rolls are precision-built and they're *completely interchangeable.*

But far more important, you're sure of the same long, smooth, dependable bearing service the manufacturer originally built into his product. The reason he specified HYATT Hy-Rolls was to assure you the best possible performance. *Isn't that a good reason for you to specify them again?* Hyatt Bearings Division of General Motors, Harrison, New Jersey.

Watch "WIDE WIDE WORLD" Sundays on NBC-TV

**Always look for the familiar blue and yellow box —when it comes to quality, there's no substitute for**

AVAILABLE THROUGH UNITED MOTORS DISTRIBUTORS GM PARTS SALES

# HYATT HY-ROLL BEARINGS FOR REPLACEMENT

**An almost complete optimism was prevalent among members of the major highway groups assembled in Chicago. Only . . .**

**J. R. STEELMAN** (left) president-elect of ARBA; A. C. Clark, Deputy Commissioner, U. S. Bureau of Public Roads; John A. Volpe; retiring ARBA president J. N. Robertson.

# Credit Worries Shadow Road Meetings

An ENR Staff Report

With the impact, problems and promise of the nation's $100-billion highway program permeating every session—and most private conversations and thoughts—thousands of U. S. road builders wound up a frenzied seven days in Chicago last week on a general note of optimism for their business and of determination to get the job done on time and within reasonable price limits.

Out of the welter of meetings that went on during the week—and the mammoth Road Show put on in conjunction with them—a number of key points emerged:

• Credit has taken its place with other considerations as a major worry for all concerned in the highway field. Most indications were that credit will become even tighter than it is at present.

• Obtaining qualified engineering personnel for highway departments and consultants also is a key worry for the contractors, who are concerned lest the program—and their own work—lag for lack of plans.

• The federal government—in the person of the Congress—will maintain microscopic scrutiny of the road program, to remain alert for needed legislation to keep things on schedule and to watch for abuses on all fronts.

• The rapidly developing science of the use of electronic aids for engineers must shortly result in some sort of a national organization to act as a clearing house and repository for information on the use of these wonder machines.

• The equipment manufacturers can and will produce needed machines, and contractors can handle the program.

• **Delegates swarm**—Probably no city in the world has ever seen such a swarm of delegates in a single week. They came literally by the tens of thousands to attend no less than five major conventions that were put on in conjunction with the Road Show. As an indication of their numbers, the Associated Equipment Distributors alone registered 4,400 delegates, the International Road Federation had more than 2,800 members from many foreign countries in attendance, the Construction Industry Manufacturers' Association counted representatives of all of its 237 member companies. Even the almost brand-new National Bituminous Concrete Association counted 400 delegates. And the biggest of them all—the American Road Builders Association—registered a total of more than 50,000 persons.

Heavily badged and be-ribboned, the delegates filled up every available hotel in Chicago's downtown Loop area, and spread out as far as 40 miles to the north and south in their search for places to sleep, eat and entertain.

Biggest attraction of all, of course, was the Road Show itself, with its more than $12 million worth of equipment on display in the mammoth International Amphitheater amid Chicago's stockyards. (See page 57 of this issue for Road Show report.) But attendance at almost all sessions—whether technical or general—was heavy.

• **Keynote**—ARBA's opening general session on Monday set a general keynote for all of the meetings that followed.

It presented an impressive array of government officials that included Sen. Dennis Chavez, chairman of the all-powerful Public Works Committee, and almost all members of his group; Rep. George H. Fallon, head of the subcommittee on roads of the House Public Works Committee; retiring Highway Administrator John A. Volpe, and incoming Administrator Bertram D. Tallamy; C. D. Curtiss, Commissioner of Public Roads.

Said Chavez, in the principal address: "Our committee didn't end its interest in the roads program with the passage of the 1956 act. We will continue to watch the program closely, and be prepared to bring up any additional legislation that may be indicated to insure that the roads are built. This is not a political operation of ours—we feel that these roads are of national interest, not to be impaired by partisan politics."

Said Fallon: "We are convinced that

the program is progressing favorably despite the difficulties of getting such a huge project under way. Rather than delay matters by formal hearings on various phases, our committee will content itself with frequent personal contacts with Mr. Tallamy and others concerned, to keep a close watch on how things are going. We'll hold off any actual hearings for six months or more—unless we see a pressing need sooner.

"Another thing we'll push for will be the inclusion of heliports in the general highway scheme—with the thought that heliports located at interchanges of the interstate system could be tied into both the road and the air network, to make a more complete transportation package."

Said Volpe: "Even though we knew when we started that perhaps the first two years of the program would be largely taken up with planning, acquisition of right of way and similar details, the program is moving much faster than anyone thought it could.

"An indication is that in the first three weeks of 1957, a total of $150 million worth of projects was obligated, for a rate of $2.6 billion annually if it keeps up. It is interesting to note that in the first six months of the program, in 1956, a total of $325 million of interstate contracts alone—out of a total for the year of $1.5 billion for all roads—was obligated. Out of that $325 million, about $100 million went for engineering."

Tallamy, appearing on the program just two days before his confirmation as Highway Administrator, confined his remarks to a pledge to handle the program with greatest dispatch, and a plea to all concerned to drop "business as usual" practices in the interest of getting the highways built.

Sen. Francis Case—also a member of the Chavez committee—added that Congress had no intention of by passing continuing improvements to primary, secondary and urban roads (the so called ABC system), and would continue to provide increased funds to finance these road nets.

• **Finance problems**—Problems of financing as they affect the contractor, the machinery manufacturer and his distributor, took up a lot of the delegates' time at all meetings. The consensus seemed to be this:

• The squeeze on the small contractor will become greater, since dealers are not prepared to carry him on a time-payment basis, and since manufacturers—many of them caught short of funds because of heavy capital investments in expanded plants—aren't eager to carry their dealers. Various meetings at which representatives of the banking fraternity appeared as speakers or panelists made this point very clear, even though most bankers expressed a growing interest in construction industry dealings. The result will be an ever greater emphasis on the business practices of the contractors themselves, in order to qualify for the loans they need to run their business.

There were some notes of optimism, however. Banker Fred F. Florence of Dallas commented, "There have been some indications recently that the period of tight money may have reached its peak. Tight money doesn't mean that credit isn't available—it does mean that borrowers must be willing to compete for money in the markets, through the pricing mechanism of the interest rate."

Nowhere, incidentally, was there any indication of serious worry about the ability of the states themselves to match federal funds provided for the road program.

• **Technical sessions**—Of the dozens of technical meetings held by all five major organizations at Chicago, two stood out strongly—although all, as usual, presented discussions of the many problems facing the highway fraternity.

One of these was ARBA's educational division, where a panel discussion was used to emphasize the serious problem of shortage of qualified engineering personnel—a shortage on the side of the highway departments and other government agencies, rather than on that of the contractors. But the panelists and the audience made it very clear that the contractors are much concerned with the problem, viewing it as a source of delay, higher costs and possible loss to the highway program if not remedied.

Here's what the panelists had to say:

"The day of the hard-boiled construction foreman or labor pusher is past," said contractor Charles W. Smith, of Pensacola, Fla. "We need highly educated and technically trained young engineers to develop into practical construction superintendents, we also need them for soil engineers." Smith offered two suggestions for getting more young engineers interested in construction: Colleges and universities should place greater emphasis on cooperative training of the embryo construction engineer, and more contractors should give him summertime employment.

"Highway departments realize they are in a tough competitive market for engineers," said Highway Administrator George M. Foster, of Michigan. "They need more men not only with technical background and knowledge, but also with some administrative experience. This means offering better pay and fringe benefits to attract more young engineers into highway work—then intensified in-service training to increase their capabilities and speed up their advancement."

Presenting the consulting engineer's viewpoint, Hal G. Soms of Columbus, Ohio, pointed out that as highway and bridge construction projects get bigger and more complex, engineers must broaden their engineering knowledge. He said that consulting engineers can help in this endeavor in a number of ways: provide better training programs for their young engineers; give them more opportunities to develop their creative and leadership abilities.

• **Electronics**—Concern with the problem of manpower to turn out plans rapidly enough for the highway program was evidenced in the heavy turnout for an ARBA technical session to discuss advances in the use of electronic devices, photogrammetry and other aids.

Top attention-getter of the session was a proposal by Enoch R. Needles, consulting engineer and past president of the American Society of Civil Engineers, for the establishment of a national clearing house for information on work being done to increase knowledge of how to use computers.

"Our firm," said Needles, "knows the problems of the work involved in setting up programs that can be fed to the computers for solution of engineering problems.

"It is now entirely possible that duplication of studies of the use of computers can and should be eliminated. We should now take steps to pool our knowledge.

"I think the time has come for a meeting of all concerned, on a national basis, to create a national council or clearing house that would collect and disseminate completed information on fundamental problems. Our own firm would contribute to such a pool the two manuals on programs that we have already developed, and a third which is now in process of preparation. I am sure that if all such work was pooled, our progress would be faster, our expense less—and that the whole industry would benefit."

The need for pooling such information was echoed by R. E. Boger, publisher of ENGINEERING NEWS-RECORD and CONSTRUCTION METHODS AND EQUIPMENT, who also was a panel speaker.

H. A. Radzikowski, of the Bureau of Public Roads and a recognized leader in promoting mechanical devices to aid engineering work, followed Needles' comments with the assurance that a meeting under BPR leadership (but sponsored by some five other organizations) is to be held in Los Angeles Mar. 5, 6, and 7—and will most certainly take up the Needles' proposal.

The assembled engineers at the meet-

ing got one wry comment from Nello L. Teer, Jr., North Carolina contractor, who stated that his firm had already worked on jobs where computers had been used to speed engineering work. "We find no difference, so far as we are concerned," said Teer, "as long as you engineers don't use the computers as something else to hide behind when corrections have to be made."

• **Other sessions**—Other meetings held during the week of conventions took up lesser—but equally important problems—such as continuously reinforced pavement design, stabilization of roads with materials such as calcium chloride, asphalt and cement, and bridge design.

At one of these meetings, O. J. Porter, consulting engineer, told contractors they would have to consider jobs in the near future where stabilized sub-bases would extend a number of feet below present limits to accommodate increasingly heavy wheel loadings. These considerations, Porter said, would call for improvements in compaction equipment and methods.

• **Elections**—At the close of their various meetings, the groups elected new slates of officers for the coming year. Principal officers newly named and seated included:

• **ARBA**—Julien R. Steelman, who is president of Koehring Co., president; J. E. McCracken of Bethlehem, Pa., Nello L. Teer, Jr., of Durham, N. C., Harold L. Plummer of Madison, Wis., and W. A. Bugge of Olympia, Wash., vice presidents.

• **CIMA**—Clarence E. Killibrew, who is vice president of Clark Equipment Co., Benton Harbor, Mich., president; Boyd Oberlink, vice president of Allis-Chalmers Manufacturing Co., first vice president; Henry Barnhart, vice president of Baldwin-Lima-Hamilton Co., second vice president.

• **AED**—(See story below.)

• **NBCE**—Re-elected: Sheldon G. Hayes, Detroit, president; Bryan M. Collins, Austin, vice president, Allen Snyder, Garwood, N. J., secretary-treasurer.

• **IRF**—Conducted separate technical sessions, elected no officers.

# Financing: Main Topic of AED Meeting

Buoyed by the rapidly accelerating pace of the highway program—but with weather eye cocked at tightening credit—construction machinery manufacturer are looking confidently at the coming year's business. They expect it to be better even than 1956, when many of them hit new sales peaks.

That was the sentiment as the Associated Equipment Distributors ran off their own three-day meeting in conjunction with the Road Show at Chicago last week.

Their optimism was well founded. Within the first two days that the show was open to visiting delegates, manufacturers reported major sales of heavy equipment—one reported the sale of $125,000 worth of equipment on the first day. And almost every manufacturer reported distributor interest as brisk and businesslike in picking up new lines or expanding old ones.

• **Credit is question**—The perennial worry of the distributors, however, is credit. And this year—with their contractor-customers straining to equip themselves for bigger jobs—credit is beginning to be a bigger worry for the dealers.

The concern was reflected both in the major general meeting of AED's session, which presented two talks and an eight-man dealer-banker panel to discuss the question, and by the individual delegates in conversations between themselves.

On an individual basis, the problem is just how far—and for how much—a dealer should carry his customer in the matter of down-payments and time for payments. Related to this, of course, is how far the manufacturers are willing to go to carry their own dealers. Not all, but at least a clear majority of the manufacturers said they will refuse to get into the credit business, and will continue to insist that dealers pay cash for the machines they take from the factories. Their reasoning is generally that under pressure to get rid of a machine, which represents money out of his pocket as long as it stands on his floor, the dealer will work to sell it. If, on the other hand, he has the machine only on consignment, it may stand on the floor for a much longer period.

That leaves the problem up to the distributor and his banker—and their joint knowledge of the customer's credit standing and business practices. Some dealers are getting around the problem by leasing their machines at a flat rental rate, depreciating the machine by the amount of the monthly rental, and making it available for sale at the depreciated price at any point or when the rental period is over.

What it adds up to is a further tightening of the squeeze on the small contractor trying to get bigger, and a further emphasis on good business practice by all contractors in order to qualify for credit on machines that he must have.

Sensing their own key role in the successful outcome of the highway program, the equipment distributors arranged a full dress examination of the problem that worries them most: financing of equipment purchases by contractors. A panel of bankers and AED members brought the subject down to details—terms of loans, interest charges, recourse and non-recourse paper, equipment repossessment—after Frederick Solditt, vice president of Harnischfeger Corp., Milwaukee, presented the general picture.

Solditt estimated that in 1956 the construction equipment industry produced $2 billion worth of machines, of which more than $1¼ billion was sold and serviced by distributors. To point up the coming financing problem, he then estimated that in each of the next two years' sales of construction equipment will have to increase from $300 to $350 million, or about 25%.

Solditt set forth some desirable actions for each of these elements of the industry – manufacturer, distributor, contractor, government and banker. He said:

• Manufacturers should neither engage in the financing of equipment nor be a party to any unsound financing plans.

• Distributors should sell equipment on its merits and not on easy financing terms, and be careful to conserve working capital for the continuing job ahead.

• Contractors, should not try to obtain the maximum amount of work for which they can secure performance bonds, and then find themselves short of adequate funds to purchase necessary equipment.

• Governments at the various levels should overhaul their pay practices so that contractors can be paid more promptly for work done.

• Bankers should view the stepped-up pace of roadbuilding as a real opportunity to participate at an increasing scale in financing equipment that must be purchased if the highways are to be built.

The banker-distributor panel focused more directly on this banker role. Even though the bankers present were familiar with construction equipment financing—as distinct from the much larger body of bankers which is not—they held some differing views. Thus, some wanted the distributor to put his own name on bank loan paper to the contractor, partly as a guarantee, but mostly, it seemed, to avoid repossessing equipment that the bank was not in a position to dispose of. But one banker, who has had experience with nonrecourse paper—that is, with no countersigning by the distributor—reported that he favored this kind of loan. Most of the distributors would go along with recourse paper when necessary, but felt that bankers often asked for too

many guarantees even on loans of the very best kind.

There was general agreement that down payments should be substantial, so that the contractor will have enough of an equity in the machines to feel responsible for them.

The lowest possible down payment would occur on lease-purchase arrangements, and be one month's rent. But the leasing plan should only be permitted for established contractors and for those who can produce "pleasant reading balance sheets", as one banker phrased it.

As to terms of loans, it was recognized that the larger amounts required to purchase modern equipment units justify longer periods than the 12 months which was standard not many years ago. Two years is reasonable, and three years is permissable. In northern climates, where unproductive winter periods are certain, it is reasonable for banks to permit contractors to skip payments at that time. Broadly the term of the loan should be carefully integrated with the earning power of the equipment on a known job. Three payments in default should be the signal to call a loan—either by having the distributor buy the paper back, on recourse paper, or by the bank repossessing the equipment.

At the conclusion of their meeting Wednesday, the distributors watched the seating of L. Miner Doolen, president of Telford Equipment Co. of Lansing, Mich., as new president of the organization. He succeeds Stanley Laskey of Fargo, N. D.

## Pennsylvania Picks Route For Delaware Expressway

The Pennsylvania Department of Highways and the U. S. Bureau of Public Roads have accepted the recommendations of Philadelphia Mayor Richardson Dilworth for the route of the $200-million Delaware Expressway. The new 30-mile line approximates one of several routes proposed by Edwards, Kelcey & Beck, Philadelphia consulting engineers.

The action removes the last roadblock on a limited access highway to provide a high speed traffic artery linking the new Walt Whitman Bridge across the Delaware River with the Pennsylvania Turnpike near Bristol. The expressway already has been approved for financing on a 90% basis by the federal government as an interstate highway to the Bristol interchange.

State Highways Secretary Joseph J. Lawler said that design engineers will be designated shortly to begin working drawings.

He expects to have construction under way on at least one section before the end of the year.

## Tallamy Moves In

### Gets unanimous vote as Highway Administrator

Bertram D. Tallamy's nomination by the President for federal Highway Administrator was given unanimous approval by the Senate this week. He takes over from John A. Volpe the job of administering the nation's $33-billion highway program. Volpe took the job last October on an interim appointment until Tallamy could take over.

There is no doubt that Tallamy is walking into a job that will be one of the biggest challenges in his career. Congressmen say that problems arising out of the road program are beginning to unfold fast, and Tallamy will be on the spot to supply the answers.

They wanted to know, for example, how Tallamy felt about adding more miles to the interstate system, preventing billboards from springing up along the roadways, and if the roads should be located so that they service local communities rather than take the shortest route between two points.

Tallamy told the senators that he has "no doubt at all but that additional mileage must be authorized" for the interstate system. But, is "not quite sure" when it should be increased. He doesn't want to "open the door" too soon and risk delaying the whole program, however.

The Bureau of Public Roads should take a more "forceful position" in getting the highways built, Tallamy said. Not as a "dogmatic dictatorial" position but rather one of aggressive leadership and assistance, Tallamy told the legislators.

He is not out to build interstate roads only, Tallamy said, but also to see to it that the primary, secondary and urban road systems get a full share of attention.

Having been given a preview of what the congressmen see in Tallamy's job, here is how his time is likely to be spent, based on the experience John Volpe had in the three months that he filled the position.

Most of Volpe's time, and Tallamy will likely find it the same, has been spent in Washington behind a desk. In spite of the desire to stump the states and personally check progress, policy decisions take most of the time.

There is a continual flow of "hot" decisions on such things as route locations, by-passing towns etc. that can't be settled at the state level and are tossed to Washington for the final say.

Visiting delegations, too, must not feel shut out from the top office. Congressmen with complaints from back home want to talk with the "boss" when they discuss state problems. It all means that much of the administrator's time is spent just listening. But, after the program gets a little further along the time spent in Washington should taper off and leave more freedom to trouble shoot in the field where snags develop.

## New York City Artery To Get Major Improvement

A proposed $42.2-million reconstruction of Manhattan's West Side Express Highway has been announced. The original road was constructed piecemeal over a period of 30 years and is considered by city authorities to be grossly inadequate for handling current traffic. The six-lane road is reduced to four lanes by tight bends at several points, most of its ramps permit only single lane access and congested city streets provide the only connections between the highway and the Holland and Lincoln Tunnels.

The new plan calls for widening narrow sections of the highway, eliminating reverse curves, constructing new ramps and building high-speed interchanges for direct tunnel connections.

Because of the importance of the road and the area it serves, its reconstruction comes under the provisions of the Urban Federal-State Highway program. New York City's share of the total cost will be only one half the land acquisition costs—in this case less than $1.7 million. The federal government will contribute $9.5 million, and the state $11.5 million. The $20-million interchange at the Lincoln Tunnel will be paid for by the Port of New York Authority.

**UP TO 10 FT OF WATER** covered almost all of Pound, Va., last week as an estimated $15 million of damage was caused by . . .

# Ohio River Tributaries in Flood

Flash floods caused by 5 in. of rain over a wide area in a 3-day period last week swept along the Cumberland River and three other northerly flowing tributaries of the Ohio River in Kentucky, Virginia and West Virginia. The rains began Jan. 28 and at week's end all except one of the rivers, the Big Sandy along the Kentucky-West Virginia border, had crested. Rough preliminary estimates placed the damage at $15 million with half again this amount prevented by flood-control structures.

In their wake the floods left hundreds of families homeless, power and water supplies out and one community completely isolated, and several river-stage records. Cleanup work has already begun by the victims, aided by state and federal troops and the usual flood relief agencies.

In the Cumberland Valley, only cities along the upper reaches of the river suffered appreciably. Three big dams, Center Hill, Dale Hollow and Wolf Creek are credited with reducing the stage at Nashville by 8 ft and preventing damage of $1½ million there. As it was, the Cumberland at Nashville crested 1.3 ft above flood stage and caused some $50,000 of property damage.

• **Biggest sufferer**—Worst hit community on the Kentucky River, which joins the Ohio about 220 miles above the Cumberland, was Hazard, Ky. It was completely isolated for a time, had all its utilities knocked out under 17 ft of water on the main streets, and suffered some $5 million in damage.

Big Sandy River waters, which join the Ohio 130 miles above Cincinnati and 180 miles above the Kentucky River, flooded out 90% of the town of Pound, Va., located in the uppermost reaches of the basin. Downstream a few miles, Pikeville, Ky., was covered with 11 ft of water, which equaled record stages back to 1862. Several other cities along the Big Sandy also saw record high stages.

Easternmost river in flood last week was the Guyandot in West Virginia, which flows into the Ohio a short distance above the Big Sandy. The Ohio itself was not in flood, with crest at Cincinnati predicted at 5 ft below flood stage. However, high water on the big river made it advisable to fill construction cofferdams at Markland and Greenup Dams.

Flood-control reservoirs and levees built along rivers to the east kept rainwaters pretty much in check. Bluestone Dam in head waters of the Kanawha River in West Virginia is credited with lowering stages by 4 ft and keeping them below flood levels. However, the city of Bluefield, W. Va., located above the dam, had to get along without fresh water for 30 hours.

Tygart Reservoir, at the head waters of the Monogahela River, helped keep coal barges moving to Pittsburg's steel mills by holding stages.

Unusually heavy rains during the latter part of last week caused a 7th tributary of the Ohio, the Tennessee River, to pass flood stage at Chattanooga over the weekend. Only fragmentary reports were available from this area at press time (Monday), but it appeared that a major threat to the Tennessee Valley had been averted with the aid of TVA flood-control measures. Chattanooga is the weakest point in the region from a flood protection standpoint due to its failure to build levees to complement TVA's reservoirs.

## Urban Renewal

### Industrial development started in Providence

A large steel clamshell smashed through the roof of a weatherbeaten tenement house in Providence, R. I., last week and the city's 58-acre West River industrial redevelopment project at last was under way.

In the next 60 days, 43 more slum dwellings and commercial buildings will be demolished—part of a total of 508 structures in the area that will be cleared by D. & H. Building Wrecking Co., of Warwick, R. I., under a $119,000 demolition contract.

Within the next 48 months, the present twisted street pattern of the area will disappear. In its place will be new, wide thoroughfares and New Haven Railroad sidings to service light industrial plants. These plants also will have easy access to the North-South Freeway, now being built.

After more than two years of delay, the project has moved swiftly in the past six weeks. The Providence Redevelopment Agency took title to the site last month through condemnation proceedings. Since then, price settlements with former owners have been progressing rapidly with more than $1.5 million disbursed.

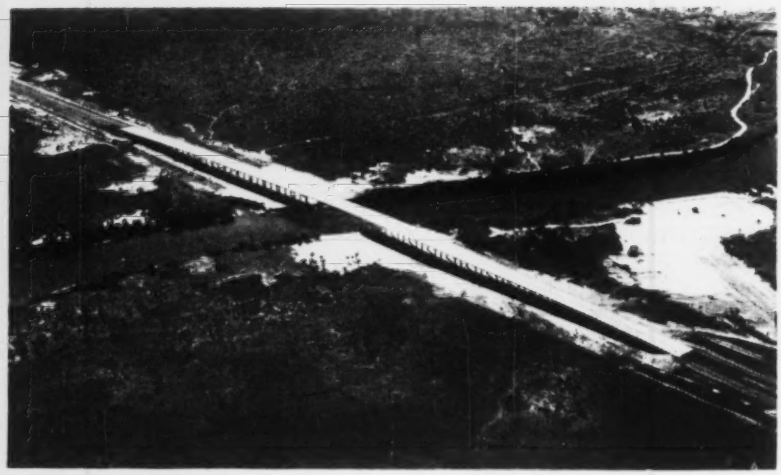
Initial project cost of the West River redevelopment is about $8 million. This includes site clearance, grading, construction of streets and utilities—but does not include cost of new buildings planned for the area. When completed, the project will provide space for about 50 light industrial firms.

Still to be determined by the redevelopment agency is the method to be used for the industrial building after the area is cleared. There are at least two possibilities: Sale of the entire area to one redeveloper, who will then construct the buildings according to an agency plan, selling or leasing the buildings to individual industries; or direct sale of parcels to industries with the agency assuming the role of redeveloper.

Either way, redevelopment will be controlled carefully by the agency, under its plan which specifies size of buildings, setbacks, architectural treatment, parking requirements and other factors.

As in most redevelopment projects, knotty human problems required solution as families were uprooted; 700 families are being relocated with the city's aid.

One source of objections to the redevelopment was the necessity of demolishing several Roman Catholic structures long identified with the city. These include a 100-year old church, a parochial school, a convent and a rectory.



LARGEST AND LONGEST tollroad bridge runs 3,000 ft over the St. Lucie River.

# Florida Opens Its Turnpike

Florida's first turnpike—Sunshine State Parkway, stretching 108.8 miles from Miami to Ft. Pierce—was opened to traffic Jan. 26.

The new superhighway, started in July, 1955, is the first section of a limited access road that eventually will stretch the full length of the state.

The Florida Turnpike Authority, created by the 1953 state legislature to build and operate the tollroad, was authorized in 1955 to extend it northward 279 miles to Yisonia, 15 miles north of Jacksonville. Late last month, however, a lawsuit aimed at preventing the authority from extending the Miami-Ft. Pierce section to north Florida was filed at Ft. Lauderdale by a group of Jacksonville citizens. The action asks that the authority be restrained from using funds from any bond issue or other revenues for constructing facilities that bypass Jacksonville.

It is claimed that bonds of the Jacksonville Expressway including a new $70-million issue that now is being prepared—will suffer by the diversion of traffic. And it also is asserted that the turnpike extension, if built, should tie in with the expressway.

Northern extension of the turnpike would require sale of a $185-million bond issue. This has been held up pending more favorable developments in the bond market.

The Miami-Ft. Pierce "Bob-Tail" section was built at a total cost of $62 million, including a six-mile stretch from Hollywood to Miami that was not in the original plans. Its pricetag represents a saving of approximately $12 million from the $74 million worth of bonds issued to finance the work.

Preliminary traffic surveys of the Bob-Tail section predicted upward of an 11,000-vehicles-a-day average through the first year. If this is equaled or exceeded—as has been the case with Sunshine Skyway over Tampa Bay—sale of the $185 million in bonds for the northern extension may be easier to achieve.

• **Cost-cutting methods**—Actual construction costs of the Bob-Tail section ran about $470,000 a mile. This low figure, as compared with other turnpikes, is attributed by the authority to the fact that work was split up into many contracts so that contractors could bid on the specific jobs they were best qualified to do by reason of experience and equipment.

Too, right-of-way acquisition costs were held to a minimum because the route selected runs through sparsely-settled country, well to the west of city limits of municipalities that will be served by the new road.

In addition, an estimated $250,000 in construction costs was saved by establishing a testing laboratory adjacent to Turnpike Authority headquarters at Ft. Lauderdale. This materials testing division, with 11 full-time and three part-time employees, analyzed materials to determine their fitness for the job.

Soils along the right-of-way were tested to determine if their compactibility was suitable for embankments; all asphalt materials were tested for viscosity; sand and rock mixed with asphalt were checked for proper size; tests were run on cement, sand, rock and water before concrete was produced and concrete samples were put through pressure, acid and water tests. In addition, examinations were made of reinforcing steel, prestressing cables and structural steel, guard rail paints, concrete and corrugated metal drainage pipe, right-of-way fencing, guard rails, timber preservatives for fender bumpers under bridges and metal posts for turnpike signs.

• **A triple problem**—Although the turnpike runs in a straight line over flat country for most of its length, contractors faced a triple problem: bridging 88 rivers, canals and highways; grubbing out and filling in low spots; and digging canals along both sides of the right-of-way so that adjacent farms and ranches would not be cut off from drainage and irrigation.

The digging out of 448,000 cu yd of muck was required before the 14.5 million cu yd of earth could be placed on roadways. In addition to yardage needed for the fill, 5.2 million sq yd of stabilization material had to be mixed with the earth fill to give the firmness necessary for the limerock base and surfacing. The 8-in. limerock base took 3.5 million sq yd, over which was spread 454,000 tons of asphaltic concrete.

An economy in providing the fill material was achieved by digging a new canal along the west side of the tollroad, while—at the same time—the existing canal on the east side was widened and connected with laterals to the west side canal, assuring sufficient water on both sides. These dredging and digging operations effected a large saving by providing about 10 million cu yd of fill that otherwise would have to be brought in from points that are farther removed.

## $1-Million Saving Offered On Second Honolulu Bore

Contractor E. E. Black has offered the City-County of Honolulu a proposal that he be retained to build a second parallel Koolau Mountain tunnel—authorized in 1955 with a $6-million bond issue—while still working on the trouble-ridden first tube. Five men were killed and two injured in three cave-ins (ENR Aug. 26, 1956, p. 25).

Black requested that he be given the contract without competitive bidding and added that building the tunnels simultaneously would save the city $1 million and one year.

Mayor Neal S. Blaisdell and a majority of the Board of Supervisors have indicated that they favor the proposal.

Started in January, 1954, and originally scheduled for use by mid-1955, the first bore is now set for completion by April, 1958, a date when the contracting firm says it can have the second tunnel ready. The tunnels are each to be 2,775 ft long, housing two lanes of one-way traffic.

As a result of pike probe . . .

# Tollroad Chiefs Are Suspended

Gov. George M. Leader has suspended Pennsylvania Turnpike Commission Chairman G. Franklin McSorley and Commissioner James F. Torrance from their jobs pending court disposition of grand jury indictments against them. Both were suspended without pay.

The governor made the suspensions effective at the close of business Jan. 30 to give the state senate time to confirm a new member, and maintain a quorum on the pike board.

Leader said a quorum would be necessary "to preclude any possibility of a technical default under the bond indentures."

Leader also ordered suspension from the pike payroll of John D. Paul, chief engineer in charge of construction, who also was indicted.

The Dauphin County Grand Jury returned indictments Jan. 23 against McSorley, Torrance, Paul and 20 others after a probe by a special grand jury, on charges made by the Leader administration of an attempt to swindle the Turnpike Commission out of $19½ million.

Court trials are expected to start in March on the 23 indictments.

The special grand jury has not finished its work. It still has a series of charges to dispose of involving former turnpike employes and persons dealing with the commission under former Republican rule.

McSorley, Democratic chairman of the road agency, was not named in the original complaint but was caught up in the probe and indicted on a charge of malfeasance, misfeasance and nonfeasance in public office for allowing a commission-paid employe to serve as private chauffeur of former chairman T. J. Evans, Republican, for eight months after Evans had been removed from office by Gov. Leader.

Commissioner Torrance, Republican, was indicted, along with former chairman Evans, on conspiracy charges for their part in the Manu-Mine Research and Development Company's program for mine flushing on the roadbed area of the northeastern extension in Luzerne and Lackawanna Counties.

Also indicted were Charles W. Stickler, Jr., president of Manu-Mine, and Clayton A. Landsidle, Manu-Mine general manager; two employes of the J. E. Greiner engineering firm of Baltimore—G. J. Hudert and E. J. Donnelley; Joseph Rogers, owner of the Rogers Construction Company, Scranton, one of the mine flushing contractors whose work was planned and supervised by Manu-Mine; three employes of the Rogers company and nine Manu-Mine employes. Former commission employes Paul J. McNeill, ex-finance officer, and Theodore S. Paul, ex-legal counsel, also were indicted.

With removal of McSorley and Torrance, the remaining pike board members are John F. Byrne, of Philadelphia, and highways secretary Joseph J. Lawler, an ex-officio member, both Democrats. The appointment to be made by Leader will fill a vacancy, holding the two suspended commissioners' jobs open pending court decision on the indictments.

Governor Leader's plan to revamp the commission and "restore public confidence" in the agency will be submitted to a Republican controlled legislature. The governor is a Democrat.

Leader explained his plan, which includes removal of tolls, as follows:

"The unfortunate state of affairs on the Turnpike Commission proves to me that some fundamental changes are in order.

"We are seeking a solution which will bring high standards of management to the turnpike; coordinate it with the state highway system where such action is proper; and create a body which will constructively plan for its future as a toll-free road.

"We will propose that the direction of the fiscal obligations of the turnpike system be placed in an unpaid board of outstanding Pennsylvania citizens. This board will fix the tolls, collect them, and disburse the funds so raised.

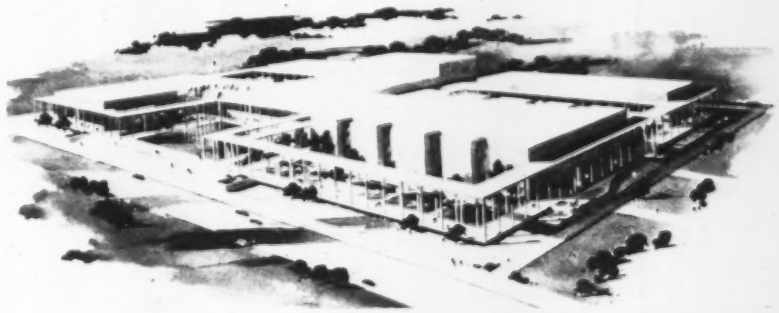
"Maintenance and construction will be placed in the control of the Department of Highways, as was actually contemplated in the (original) enabling legislation for the turnpike.

"The new administrative agency will also be charged with planning for the eventual elimination of the turnpike's debt and its transfer to toll-free operation.

"The change in management will, of course, not alter the terms of indenture under which the Turnpike Commission has incurred obligations to the investing public.

"I cannot believe that the legislature will not join us in these recommendations in view of the indictment, not only of individuals but the whole method of turnpike operation, which is so shockingly evident in the Manu-Mine scandal.

"As governor, I believe that we must act promptly to restore public confidence in the turnpike, its operations, and its obligations. I am acting in accordance with that belief; I trust that the legislature will act with equal dispatch."



# Capital May Get Huge Cultural Center

Recommendations for a $35-million cultural center for Washington, D. C., may be considered this week by the Senate and House District of Columbia committees.

Contained in a 95-page report to the President and Congress, the recommendations are the result of a 1½-year study by a 21-member commission created by Congress in 1955.

As proposed by the commission, under the chairmanship of Mrs. Eugene Meyer, Washington author and journalist, the center will include a convention and reception hall with 100,000 sq ft of floor space; a 4,000-seat auditorium and music hall; a 1,600-seat theater plus a tourist information center, meeting rooms, restaurants, and parking space for 1,500 to 2,000 cars.

Top choice among the three sites deemed suitable (out of 10 considered) is the "Foggy Bottom" area, overlooking the Potomac River near the Lincoln Memorial. The other two sites are in the southwest section of the capital.

In making the study, the commission was aided by a planning board composed of eight prominent architectural, engineering and research firms.

# 11 rock-speeding PAYHAULER® TRUCKS star in seaway's biggest, single show!

## 8 other International rigs help move 2,451,000 cu yd of rock and earth in $14½ million lock construction!

Eleven International "95" PAYHAULER trucks...because of their high speed, big pay-capacity and around-the-clock endurance...are playing the starring roles in the St. Lawrence Seaway's biggest, and perhaps toughest, single show!

The PAYHAULER units are sparking a demanding monthly production schedule of 120,000 yds of rock and 100,000 yds of common earth. The scene is United Waterways Constructor's $14½ million contract of the upper Beauharnois lock construction and channel excavation near Montreal, Quebec.

International TD-24 crawler tractors, TD-14 Skid Shovels, and a "75" PAYSCRAPER are also vital producers in the moving of the total required 1,461,000 yds of rock and 990,000 yds of earth. Lock completion is scheduled for December, 1958.

PAYHAULER units have also been moving most of the rock on a lower Beauharnois lock. On a similar shorter-haul rock job in the midwest recently, two identical PAYHAULER units maintained a production average of 2,400 cu yds per day!...And here on the seaway, with average 4,000-foot one-way hauls, PAYHAULER units' high speed, next-to-automatic Torqmatic brake control, and minute-saving, easy-to-heap big capacity are cutting cycle time to a minimum and bringing home maximum loads as well.

The rugged PAYHAULER units on the seaway job are standing up to the toughest test in their spectacular career. They're working around the clock, 5 days per week, hauling mostly rock but also proving themselves in wet, job-fouling mud and on slippery, water-soaked lock floors.

Success on the seaway and on other tough jobs the country over is proving International PAYHAULER units to be what construction men themselves asked for...a big-capacity, high-speed hauler with low downtime and operating costs. See for yourself. Try an International PAYHAULER unit on your job.

**TON-SIZED ROCKS** go up...then down into fill in 12 seconds. Two-stage hydraulic hoist provides full-time power control. Hydraulic snubbing assures over-center dumping, gentles body return.

**38 MPH SPEEDS** keep three or four PAYHAULER units on haul road at all times. Hand-operated Torqmatic brake gives accurate control for safe, high-speed travel on congested haul roads. TD-24 tractor spreads rock for fill at railroad diversion.

**MAXIMUM SHOVEL OUTPUT** on upper Beauharnois lock construction is maintained by fast, easy-loading International "95" PAYHAULER units. High tensile steel sides, triple section bottom, super-duty "spring cushions" plus strongest frame in "95's" class stand rock-shock!

## Construction details St. Lawrence Seaway Project #33

| | | | |
|---|---|---|---|
| Project length | 5,000 feet | 500,000 yd rock | aggregate plant |
| Width of lock excavation | 60 to 150 feet | 270,000 yd rock | structure fill |
| Depth of lock excavation | 54 feet | 70,000 yd rock | railroad diversion |
| Approximate use and disposal of excavated material: | | 60,000 yd rock | yard areas, construction roads |
| 40,000 yd brown clay | dyke construction | 15,000 yd rock | rip-rap and dykes |
| 400,000 yd earth | random fill | 15,000 yd rock | service roads |

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On the Greenland icecap, construction research, far inland from these iceberg-dotted bays, is being focused on . . .

# Build-up for Better Trans-Arctic

**Waldo Bowman, Editor**
**Engineering News-Record**

Somewhat like the stockades with which we circled our frontier settlements, a string of airbases along the northeast sector of the approaches to North America is relied on to halt or slow the advance of any enemy bent on our destruction. And quite like the sentinels posted atop these oldtime walls to warn of any hostile signs, there are, in this same area, strings of radar stations to detect this enemy before he could strike.

Touring these installations to observe how their construction is progressing is also a means of quieting any fears of a let-down in our defense effort. From the Grand Banks of Newfoundland to the northern reaches of Greenland's icy mountains, the bases are manned, equipped and functioning around the clock.

Equally important, the bases are being expanded and brought to a state of relative permanency compared to their early make-do condition. Sizable construction programs for example, are still under way at Harmon and Goose Bay airbases even though, since 1951, many millions of dollars has been spent on these wartime installations.

But it is at Thule, in Denmark's Greenland and the farthest north airbase in the world, that the most arresting operations are under way.

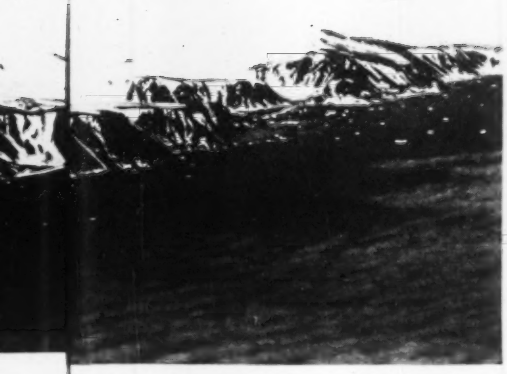
The air approach to Thule is a constantly changing scene of striking beauty as the great Greenland icecap comes into view as a backdrop to the iceberg-dotted waters below. Smooth and relatively flat, except where it is pierced with a few snow-covered mountain peaks, it appears to be limitless in extent, and does actually extend for 1,500 miles north and south and as much as 600 miles east and west. The icecap occupies 700,000 of Greenland's total 840,000 sq mile area, only the fringes of narrow coast, which encircle it, being free of the huge ice load.

**• Two miles thick**—The cap ranges up to 10,000 ft thick, is several hundred feet deep even along its edges. Most of these edges are vertical cliffs of ice, but where mountain valleys come down to the coast, their icecap filling is being squeezed out in the form of glaciers, whose ends break off to fill the bay with icebergs, which the Laborador Current carries southward. In the summer the edges of the icecap are furrowed by countless waterfalls and melt streams.

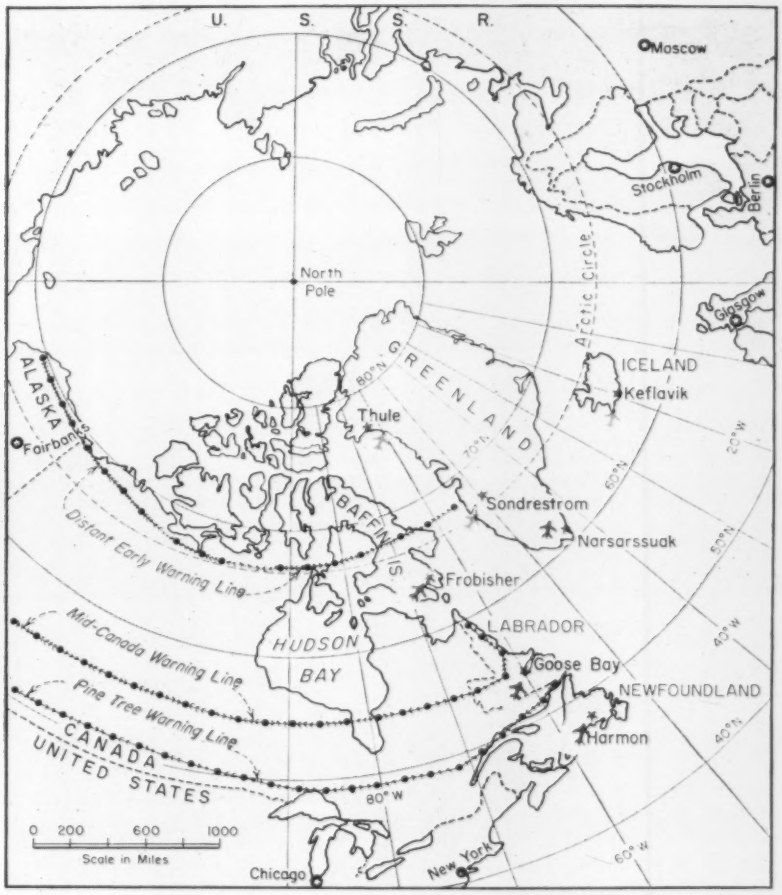
The barren fringes of rocks along the coast backed up by the serrated cliffs of the icecap, and the white blanket of the cap itself are what the traveler sees as his plane glides down to the airbase at Thule. The coast is a little wider here than at some other points, the ice cliffs a few miles farther back, and there is a broad valley between two ridges in which the base is located. The ground is also more level, but as a result of man's construction machines rather than from any special dispensation from Nature.

Present construction work in Greenland, at Thule and elsewhere, is being carried out by a joint venture known as Greenland Constructors—Danish Arctic Contractors. It consists of a combine of four American construction firms—Peter Kiewit and Condon-Cunningham of Omaha and S. J. Groves and Al Johnson of Minneapolis—plus a combine of six Danish contractors whose president, Einar Thoresen, acquired some of his early engineering and construction experience while working in the U. S. in the early '20's. The architect-engineers are Metcalf & Eddy and Alfred Hopkins Associates.

The first operation to be noted at Thule is a 50-ft shoulder-widening and paving job on either side of both the runway and the taxiways. Adhering to the Number One construction rule in this arctic land, "never disturb perma-



# Bases




**CORDON OF TRANS-ARCTIC BASES** extends from Newfoundland to northern Greenland. Construction continues on improvements to existing airbases and lines of radar warning stations, which constitute North America's first line of defense.

frost unless you have to, and in any case insulate it from summer temperatures", an 8-ft layer of gravel, or other non-frost-susceptible material, is laid down as a pavement base whether in cut or fill. The paving material is asphaltic concrete—a 2½-in. binder course, topped with a 1½-in. wearing surface.

Analagous to this shoulder widening and paving is construction of a huge operational apron. Built in the same way, it contains one interesting difference in the inclusion of two 80 x 1,800-ft tar-rubber strips of paving in the areas where jet planes will be fueled.

Thule's construction program also includes about 10 new buildings, all special purpose and, with the exception of two, relatively small. The larger buildings, each of about 60,000-sq ft, are typical of the current permanent-type construction now being used.

After the column footings are in place, a 3-ft fill of gravel is placed to cover the permafrost. Over this is cast a pad of concrete 6 in. thick, which serves as the bottom of the underfloor air ducts and as a working platform. The pad then is covered with lines of metal pans, aligned and spaced apart so that a rib-and-trough type floor results when the concrete is placed. The troughs, open at either end, serve as conduits to permit the cold outside air to move under the building and thus insulate the permafrost from any inside heat. When the buildings are heated, 4 in. of rigid insulation is placed under the concrete wearing surface.

• **Induced draft**—Where a more certain circulation of air is desired than with open-ended ducts, vertical riser pipes are placed up the sides of the buildings at the end of each duct. By making the risers shorter on one side of the building than on the other, a positive draft is produced. The risers also keep the ducts from being blocked by snow blown in from the nearby ice-cap. (Not much snow falls in Thule itself, and total precipitation is only 4 in. a year.)

The duct system foundations are, however, far from universal. All of the early buildings were merely raised off the ground on timber posts, and some of the new buildings are treated likewise simply by making the column footings high enough to give the floor about 2-ft ground clearance.

The superstructure of one of these large buildings is of a new type finding favor at several of these northern bases. Of precast concrete, the elements—both for framing and enclosure—are manufactured in Europe and shipped to the site. The design is a development of a company in Zeist, Holland, called Schokbeton, which is also the name given the type of concrete used.

Schokbeton is literally "shocked concrete", but is more accurately described as "dropped concrete", since this is the action that occurs in its manufacture. Small quantities of a no-slump mix are placed in wood forms as they are continuously dropped onto a steel anvil about 250 times a minute. The result is an unusually dense and strong concrete. For the buildings in Greenland, about half the elements have been manufactured in the Schokbeton plant and about half in the plant of Hoegaard & Schultz, Copenhagen, the Danish licensee.

The arrangement of the Thule building is notable in several particulars. Its structural framing runs in only one direction and consists of 40-ft span precast, post-tensioned girders set on brackets on precast columns. Framing in the opposite direction is provided by the roof, which is made up of 20-ft-

# Triple-Barreled AMVIT* jointed clay pipe line resists chemical attack from industrial wastes

**International Business Machines Corporation, Kingston, New York**

*Contractors*

**Turner Construction Company**
**Campbell Building Company**

*Engineers and Architects*

**Giffels & Vallet, Inc.**
**L. Rossetti**

THIS triple-barreled Amvit Jointed Clay pipe line now carries thousands of gallons of chrome plating, cyanide, acid and alkali solutions from I.B.M.'s Kington, N. Y. plant to a nearby treatment plant.

The Amvit Joint was specified for this tough job because like the pipe, it is unharmed by underground service.

***Joint is Trouble Free***

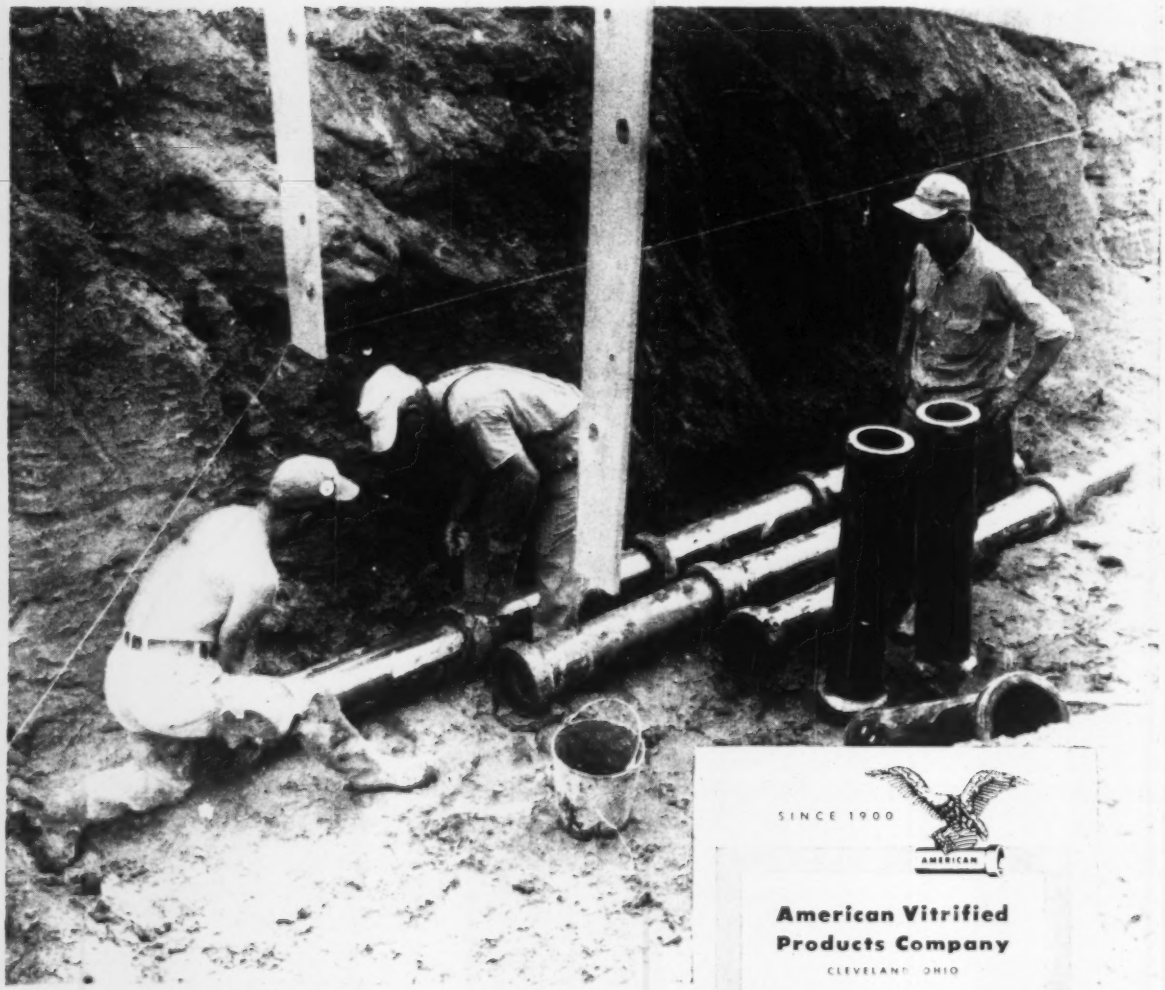
A true mechanical joint, Amvit is made from plasticized resins of polyvinyl chloride. Laboratory tests prove Amvit jointed clay pipe is corrosion proof and resists attack from most acids.

***Prevents infiltration, exfiltration***

Amvit is a compression type joint on the ball and socket principle. No adhesives or other compounds are needed to make a tight seal. Just push the pipe together and the line is complete. Nothing can enter or leave the line.

Amvit Jointed Clay Pipe, in sizes 4" through 24", together with all fittings is available for immediate delivery in the Northeast and Central States.

For more information, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.



*Photograph by Doug Campbell*

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## . . . Arctic base buildup has many facets

**WHAT THULE NEEDS NOW** are wider airstrips, more fuel storage. Adding 50-ft shoulders to the main runway (above) begins with a tractor-pushed spreader laying down a 3-ft-thick gravel blanket as insulation for the permafrost ground. Finishing a 55,000-bbl welded steel storage tank with a reinforced concrete roof (above) will be followed by burying the tank out of sight.

long precast panels stiffened by flanges on the under side.

Since the building is designed for 125-mph winds, exceptional rigidity is required. Thus the girder-to-column moment connection is provided by an ingenious detail fashioned from pieces of interlocking steel sheetpiling, while the column bases are fixed to the footings through a bolted steel base plate. When erecting the girders, the hook part of the sheetpiling, which is on the girders, is slid into the socket part, which is attached to the columns. In case adjustment is necessary to secure a fit, the column base plates are adjustable vertically.

• **Special walls**—The walls of the building, as of Schokbeton buildings elsewhere in Greenland, are placed entirely outside the frame, and isolated from it so that there will be a minimum of heat and cold transfer. An insulating panel consisting of cement-impregnated wood chips between concrete surfaces, a 2-in. air space and then flanged Schokbeton outside panels constitute the walls. Both the outside and the insulating panels are supported on the grade beams, which are made extra wide.

Schokbeton buildings also have been used at other Greenland bases for barracks, some of which have been of a two-story design, in which a central corridor is flanked by rooms on either side. The corridor core of these buildings consists of precast two-story rigid frames that constitute the wind bents. These units are the heaviest that have had to be handled, 6 tons. For the most part, 1½ ton precast units are the maximum size.

The other large Thule building is of more conventional type, having a structural steel frame enclosed in protected corrugated metal siding, and with an inside wall of insulated panels. The large majority of the other new buildings are also of this type.

In addition to new building work at Thule, an extensive job of roof modification on existing buildings is under way. When the buildings were designed in 1951 the need to ship everything from the States, as well as the available information on climate, dictated the selection of prefabricated panel construction for simple and speedy erection. Experience has shown that the panels do not provide a satisfactory flat roof. There is leakage from melted snow because it is not feasible to provide tight joints due to thermal expansion and contraction of the panels and movement of the panels during high wind. Moisture from internal vapor pressure freezes inside the panels during the cold season, and then melts when a thaw sets in causing an "interior rain" within the building.

Nearly $2 million is being spent on the roofs of 85 barrack-type buildings to remove the outside skin of aluminum and its plywood backing, and to replace it with new 2-in. plywood, which is then covered with roll roofing held down by wood battens. This method of repair, adopted after trials of several other schemes, allows the panels to breathe externally and dissipate the internal vapor. On the hangars, too, a panel inner ceiling along the bottom of the trusses is being resealed at the joints with burlap strip and mastic.

• **Frontier to be conquered**—All this construction activity at Thule is obviously of vital importance in improving the operating efficiency of our string of trans-arctic bases. And yet it is not only Thule itself, but Thule's "backyard" which commands interest in this respect. For it is here at the edge of the icecap and on out across its white windswept surface that a new frontier beckons, whose strategic importance is so great that it must be conquered. Landing fields and warning stations on the cap itself could push our outer defense line another 500 miles away.

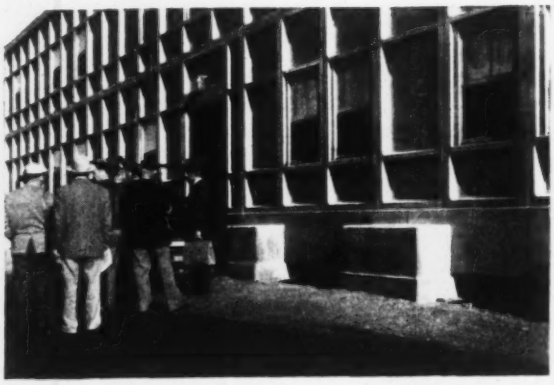
So it is that this backyard is a beehive of research activity focused on ways and means of establishing such bases, including procedures for supplying them and methods of living on them at a tolerable level of health and comfort. There is a research camp at the foot of the icecap, and another 250 miles out in the very center of its snowy wastes.

As our party approached the first camp over a winding road traversing the rock-strewn chaos of a vast terminal moraine, one of the members exclaimed, "This is research?" His credulity was not surprising, for drawn up around the camp was an equipment pool that would do credit to a sizable construction job—power shovels, a dozen big off-the-road trucks, crawler tractors and bulldozers, air compressors, a truck crane, a fleet of those little tracked amphibious vehicles called weasels and diverse other equipment. Hardly a conventional research establishment, but research was its mission, and this was the necessary auxiliary apparatus.

The principal purpose of the camp—made up of insulated tents held down with rope nets against the high winds—was revealed by its name, Tuto, standing for Thule Take Off. The equipment is being used to build an experimental ramp road from the coastal moraine up onto the icecap itself so that sled loads of supplies can "take off" from Thule to the hoped-for bases beyond. Since the edge of

## Air-cooled foundations keep permafrost ground frozen in Arctic . . .

ORIGINAL THULE BUILDINGS—timber frames enclosed in insulated aluminum panels—were built on wood stilts.



EXTENDED CONCRETE FOOTINGS lift floor above ground. Footings are massive to take the high wind forces.

UNDERFLOOR DUCTS cast with metal pan forms pass air beneath the floor of many of the new buildings.

PIPE RISERS placed at ends of the underfloor ducts assure more positive air circulation than the ducts alone.

the icecap is a melting zone in the summer, building a road over it, which will remain serviceable with reasonable maintenance, is a first-class research project.

Actually, only about 5% of the total perimeter of Greenland's icecap has slopes gentle enough for ramp access, and it is a fortunate coincidence that one of the five locations is adjacent to Thule. Other research, it may be noted, is under way on means of mounting the icecap where it ends in sheer ice cliffs, such as, for example, by aerial tramways or inclined tunnels up through the ice itself.

Laying down a gravel fill for a ramp road and compacting it can, it has been proved, be done by conventional construction procedures. The fill itself serves as the required insulating blanket to keep the ground or the snow and ice beneath from thawing. The real trouble occurs at the edges, which are undermined and slough off when the melting snow streams begin to flow and when melt takes place. Whether these streams can be confined in conduits at the toe of the fill slopes or whether these slopes should be so flattened that the melting will be held far away from the roadway are two of the ideas being investigated. Supplementing the flat slopes, there is also the possibility that blankets of gravel fill about 1 ft deep and extending 50 ft beyond the toe will provide additional protection.

Complementary to the research on ramp road construction are numerous other studies on freeze-thaw phenomena, on the movement of ice in relation to road movement and on dust control on the ramp road surface. At the end of the ramp road, up on the icecap and beyond the line where melting starts (called the firn line) experiments are also under way looking to the construction of a large gravel area where the wheeled vehicles, which bring supplies up the ramp road, can transfer their loads to sleds, and then turn around for the return trip.

Ramp roads, of course, run parallel to the direction of the melt runoff, but it may also be necessary to construct roads in a transverse direction for instance, to gain access to a tunnel into the icecap in which case provision would have to be made to carry the water through or under the road. Investigation of possible techniques are a part of the current research.

How important this would be was apparent when, upon returning to Thule from the ramp road, we transferred to weasels for a visit to an ice tunnel being driven into a cliff of the icecap face about 1 mile away. One stream that had to be forded was 100 yd wide and as much as 4 ft deep.

One purpose in drilling an ice tunnel might, as previously mentioned, be to gain access to the top of the icecap, but other purposes might be for housing (by erecting insulated structures inside) or for storage of supplies, even of airplane fuel. The temperature in such tunnels is relatively uniform—17° to 20 deg F. Another significant fact is that the air is so dry that equipment never rusts.

All of these purposes are in mind as a group of volunteer engineer troops hack their way under the icecap in a bore approximately 6 ft 2 in. diameter that presently ends in a "room" some 25 ft high, 65 ft long and 10 ft wide. Three short stub tunnels also have been excavated at right angles either side of

## HOW TO HANDLE WET JOBS

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• **Savings on materials:** Ordinarily the sides and bottom of a clarifier are paved with concrete. In this instance, a clay lining was successfully used — the clay obtained economically from nearby borrow areas.

• **Savings of time:** With job dry, fine grading of a sand base under the clay lining was done rapidly by machine.

• **Savings on maintenance:** The Griffin Wellpoint system used during construction was left permanently in place. In the future, when the tank is emptied for its periodic cleanings, these same wellpoints stand ready to lower ground water and hold lining stable. Catalogue on request.

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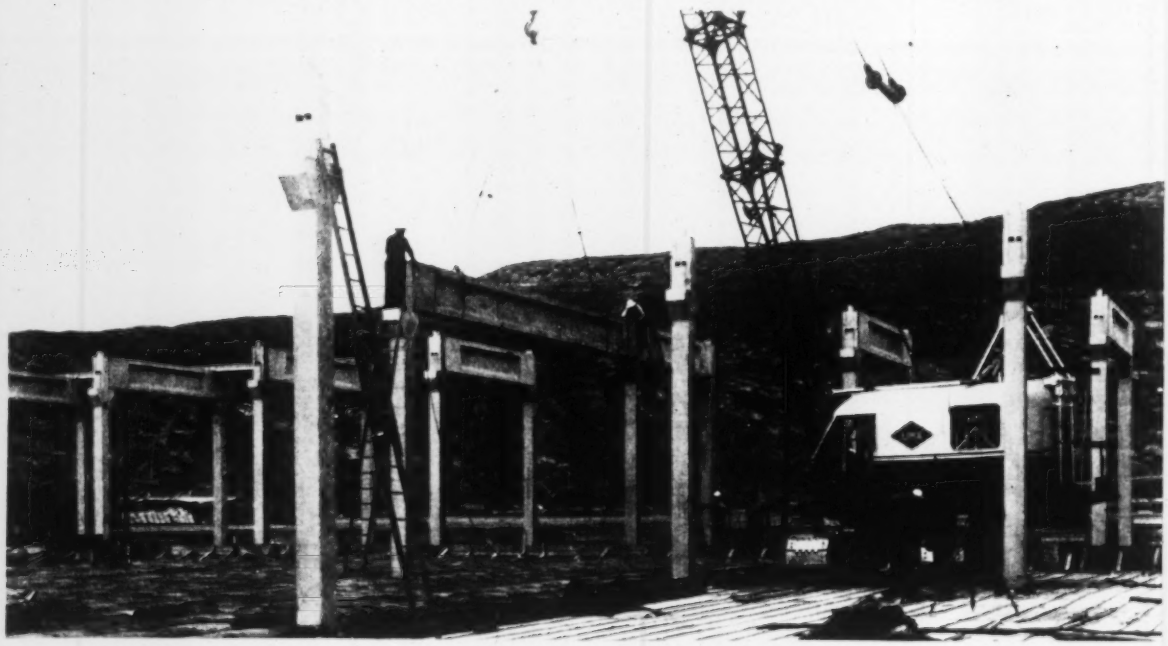
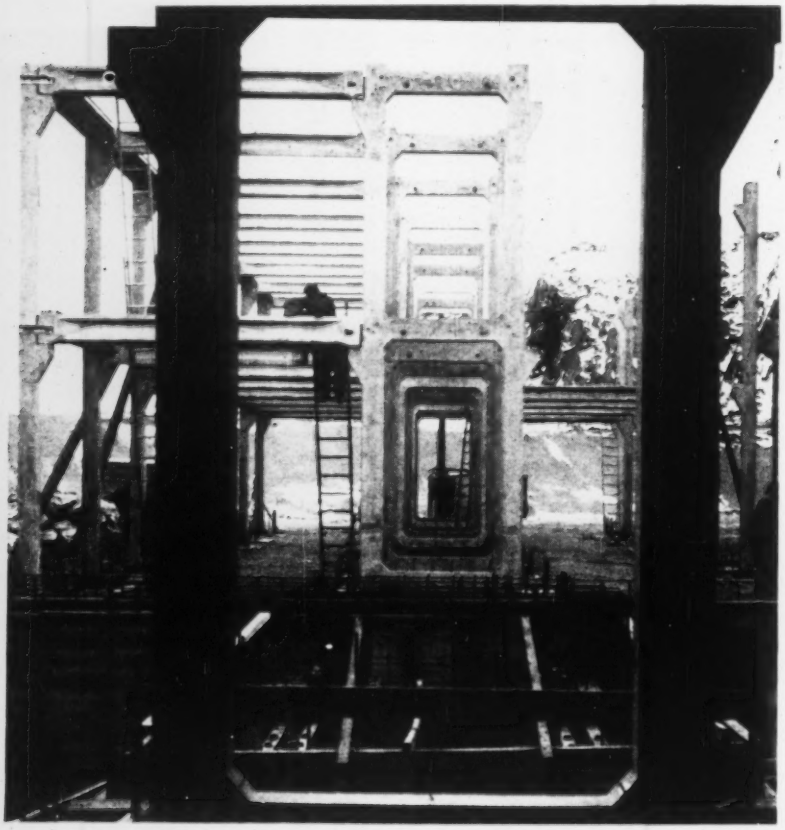
. . . A special type of precast concrete is used on new Greenland buildings . . .



. . . ON THIS WAREHOUSE at Soudrestrom, as also at Thule and Narsarssuag, girders are joined to bracketed columns by an interlocking connection composed of short pieces of steel sheetpiling, appearing as two black marks on the column faces. Precast members are made by a special jarring process. Note metal pan floor forms that will create underfloor air ducts.



. . . TWO-STORY BARRACKS at Soudrestrom include 6-ton rigid frame corridor units that are designed to absorb and carry to the foundations the wind loads brought to them from the outside walls through the framing of the rooms on either side.

this room so that, in effect, the roof of a much larger room is supported by four ice columns.

The next planned step is to remove these columns by blasting. If the roof continues to hold under the weight of about 500 ft of ice above it, a room of about 65x65 ft will result. Theoretical studies indicate that it will hold and that, in fact, an arched ice roof of 100 ft span would be possible. That theory also will be tested before the 3,000 ft of tunnel, scheduled in the current program, has been completed.

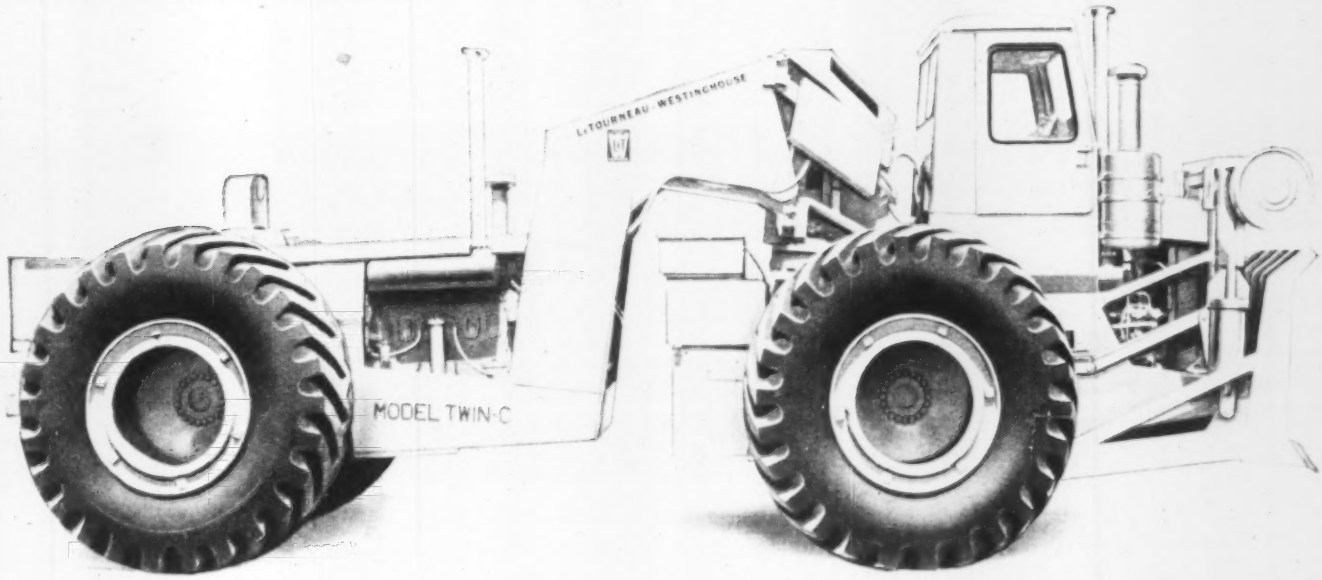
To date, the lowly hand pick has been the only tunneling tool used, but an electric coal mining machine is on the way to determine its usefulness in ice tunneling. Only actual experience can provide an answer because ice formed by the compression of snow is a quite different material from ice resulting from freezing water. For one thing it is harder and more brittle, breaking off in thin elongated pieces under the action of the picks. Under the microscope, it also is seen to have variations within itself, some specimens being virtually solid, others having minute circular air holes and still others in which the holes are elliptical.

One scientific fact, claimed to have been discovered by a kitchen experimenter, is that, in a highball, the elliptical-holed ice will crackle continuously as it has melted, while the other varieties will provide no more entertainment in this respect than ordinary

world's **MOST POWERFUL and FASTEST push tractor...**

*416 HP and 4-wheel drive*

# The Twin-C Pusher

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One operator and this powerful "Twin-C" pushes your biggest production scrapers for capacity yardage. On many jobs it will do this in less time than it takes 2 crawler-pushers with 2 operators. Rubber-tired speed, and articulated steer, give quick maneuverability for direct-line push, save seconds in picking up next load.

***Synchronized power matches speeds of earthmovers*** — Twin-C speeds match loading speeds of modern rubber-tired earthmovers, take advantage of combined power of loader and pusher to get big pay loads *fast*. Torque converter, teamed with constant-mesh transmission in both front and rear engines, reduce "lug downs" and gear changes necessary in many pushers.

***More usable power with rubber pushing rubber*** — You get greater usable horsepower and coordinated pushing force when you push rubber with rubber. You get full floating traction . . . tire treads follow tire treads . . . no loss of power to flatten out rounded tire-tracks into flat track-tracks. And Twin-C's 80,000 lbs. weight rides on four big 29.5 x 29 tires with 22-ply rating; each 25" wide for firm ground-gripping traction on any type of surface.

***Additional Twin-C advantages:***

- Forward speeds to 20 mph and fast reverse, plus "articulated" steer, enable Twin-C to position faster behind scrapers.
- Big 49½ x 88" heavy, concave push-bowl is positioned by an electric motor to take full advantage of contact area provided by scraper push-block.
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- Power-transfer differentials on both engines match pull to traction, automatically apply power to wheels on firmest footing. Keep big pay-loads rolling in sand, mud, and loose materials.

If your fleet includes production scrapers, you will want more information on the Twin-C Pusher. Ask your LeTourneau-Westinghouse Distributor for full details.

**65,900 lbs. Drawbar Pull!** Powerful 416 hp Twin-C Pusher push-loads scraper fast. In recent Dynamometer tests, Twin-C, operating in sandy clay footing, registered drawbar pull of 65,900 lbs. in low-speed range.

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LeTourneau-**WESTINGHOUSE** Company, PEORIA, ILLINOIS

*A Subsidiary of Westinghouse Air Brake Company*

WHERE QUALITY IS A HABIT

## . . Arctic base buildup encompasses icecap

**GETTING UP ONTO THE ICECAP** with equipment and supplies is a major problem for research. Where the edge slopes, ramp roads of gravel fill are being tried (left). Where the edge is a cliff (right), ice tunnels and aerial tramways are being investigated.

home-grown ice from a refrigerator.

Probably this fact is not too significant to the problem of using Greenland's icecap to good purpose, but the real research up north is all pointed to that objective. Actually the ramp and ice tunnel studies are much broader than mere experimentation with construction methods. For example, it is desirable to know more about the movement of the icecap at the edges and farther back. Thus, accurately set towers have been established and their position determined by an astronomical fix, which will be checked over a period of years. In addition, holes of 4 to 6 ft in diameter and up to 80 ft deep will be sunk into the icecap on a line a good many miles long, to determine if there is a changing stratigraphical pattern as the ice moves toward the edge of the cap. Instruments installed in these holes will measure temperature and deformation. Similar instruments installed in the ice tunnel also are revealing the deformations there, and as the tunnel is pushed farther back under the cap the effect of increasing superimposed loads will be revealed.

Finally, mapping of the icecap edge and seismic reflection studies to determine depth to rock and therefore ice thickness are a part of the general investigation. Using aerial methods, strip maps on a scale of 1:10,000, with a 20-ft contour interval, are being prepared, and then checked by ground control parties. The seismic teams have operated out of all the research camps in an attempt to cover as wide an area as possible.

**• Out on the cap.** Much of this work along the edge of the icecap is being done to throw light on the character and movement of the ice, as an aid to understanding what goes on far out on the cap itself. But out there, too, similar scientific studies are under way. Our party flew out to one of these study camps in a ski-equipped plane.

We followed a route that sled trains of supplies had clearly marked on the flat continuous carpet of snow. In a real sense these sled marks are symbolic of the progress that has been made since 1952 in pioneering methods of moving cargo and men over Greenland's icecap. As a result of dozens of trips, or "swings", as they are called, new equipment has been developed, navigation procedures perfected and trail-marking methods devised, as, for example, with energized wires that trains can follow much as a plane follows a radio beam.

Another part of these transportation studies has dealt with the all-important subject of, first, crevasse detection, and then of the strength of the snow bridges that arch across the crevasses. Instruments, mounted on booms projecting beyond the front of vehicles, have shown considerable success in revealing the presence of crevasses and to some extent their size. Load testing of the snow bridges has also been tried, as well as means of spanning open crevasses with structural bridges.

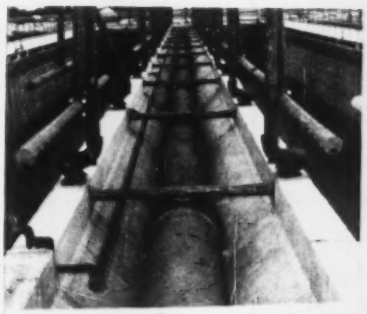
And supplementing these immediately practical studies are extensive investigations of the crevasses themselves, to determine their origin, nature and life cycle as an aid in predicting areas in which crevasses may be expected. All in all, the transportation studies, even up to now, have revealed enough to prove that any bases built on the icecap could unquestionably be supplied by ground transportation.

The icecap camp at which we landed is an operating weather and warning base, housing, in addition, research personnel of the 1st Engineer Arctic Task Force, which hails from the Engineer Research and Development Laboratory (ERDL) at Ft. Belvoir, Va.; the Snow, Ice and Permafrost Establishment (SIPRE) at Wilmette, Ill.; and the Arctic Construction and Frost Effects Laboratory (ACAFEL) at Boston. Established three years ago, the camp buildings consist of 18-ft-dia corrugated pipe sections joined together to form connected rooms. Initially set into the snow down to their mid-diameter, they were covered with drifts the first winter, then progressively buried under about 5 ft of snow annually until the roofs are presently 10 ft below the surface.

**• Buried housing.** Access may be gained down a ramp at one end, when it is not blocked by snow, but in the winter the only entrances are vertical shafts, which are also the source of ventilation. The shafts are built up as the snow accumulates and the building recedes deeper under the snow. This same build-up must be applied to any radar antenna which, of course, must be kept some distance above the surface.

It is recognized that there is a limit of depth beyond which the buildings cannot be maintained. One solution will be to abandon this camp, build another on the surface, and start the burying process all over again. But there may be other solutions, and all possibilities are being investigated.

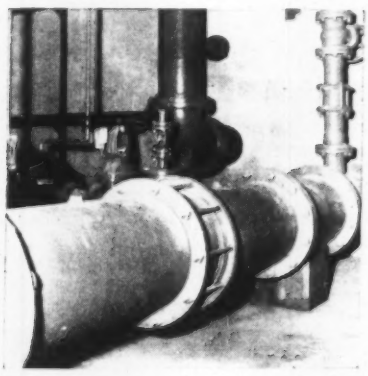
At varying distances from the camp, research operations dot the scene. Here a Swiss snow plow with powerful blowers is digging a trench 8 ft wide and 5 ft deep. It makes three passes until the trench is 15 ft deep, then an arch form is placed across the rim and snow blown on top of it. Natural consolidation of the snow permits the form to be



Workmen (left) adjust follower rings before inserting bolts on a 30-inch Style 38 Dresser Coupling. It's the air line leading to the main settling tank in Miami's Virginia Key Sewage Disposal Plant. Steel and cast iron pipe meet in a Style 62 Dresser Reducing Coupling on aeration tank air line (above).

# Quick-change Act for Miami Disposal Plant

## Steel pipe and Dresser Couplings provide easy access, system flexibility



Dismantling for maintenance looks and is easy with a Dresser Style 38 Coupling. This one joins a low flushing water line in chlorinator building. Another Style 38 is on the vertical line at upper right.

Miami Sewer Project Associates designed the new Virginia Key Sewage Disposal Plant at Miami, Florida, for high reliability and convenient modification.

They sought easy dismantling of permanent aeration lines so maintenance and repair of equipment could be performed quickly. They also wanted an easy way to dismount and set up dewatering lines in new positions as required.

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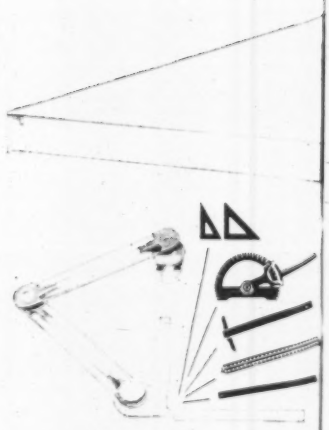

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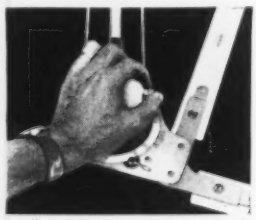
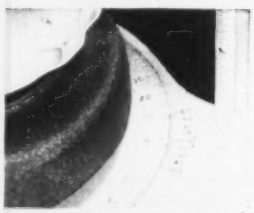


Automatic indexing stops at 15° intervals are engaged and released by just a press of the button on Bruning's unique Touch Control.

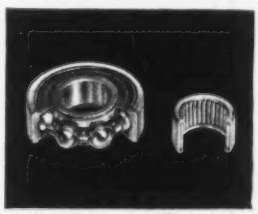
A ball-type joint between arms lets you lift your drafter over objects without unbalancing the machine or disturbing alignment of scales.

### WHY BRUNING DRAFTERS ARE TOPS IN PRECISION AND DURABILITY!

Protractors have engine-divided graduations and double verniers reading to an accuracy of 5 minutes on most Standard models, to one minute on Civil Engineer models. A mathematically precise system of pulleys, machined to a tolerance of 0.0002", assures that drawing edges remain absolutely parallel to their original angle setting. Sturdy construction of the finest materials insures lasting accuracy and trouble-free operation.



Protractor and vernier graduations are set flush in the same plane to eliminate parallax error. Ea... to-read graduations are engine divided for accuracy.



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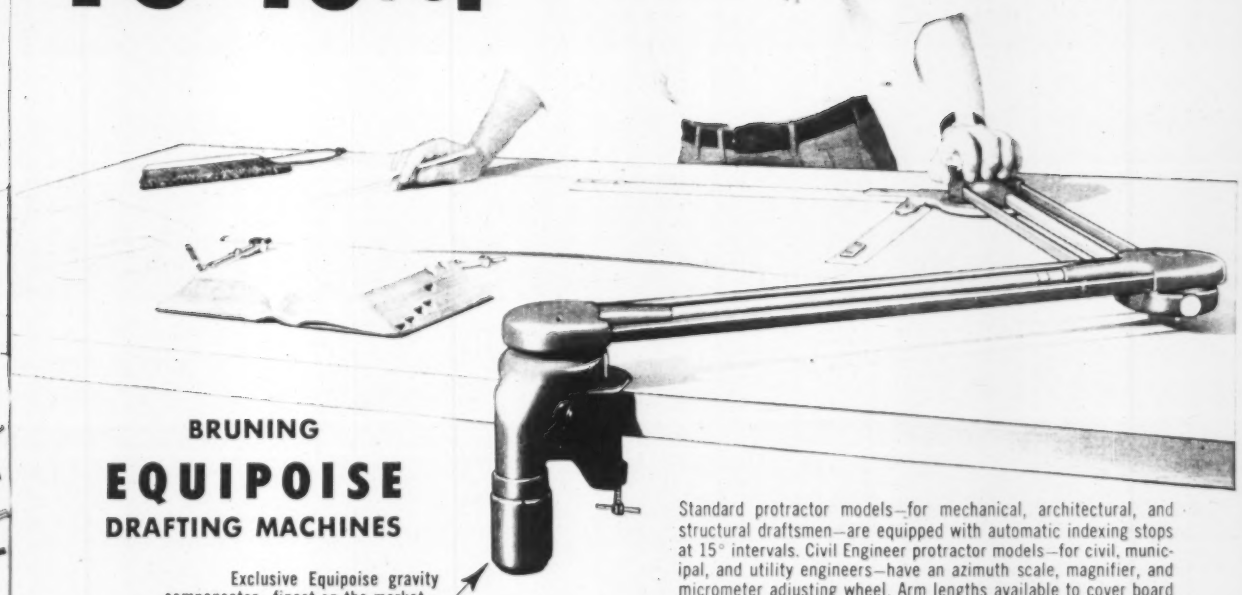

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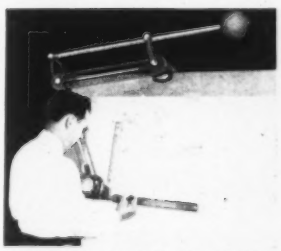
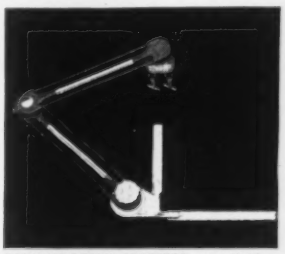


**BRUNING COUNTERBALANCED DRAFTERS** provide unusual speed, and accuracy in vertical drafting. Available with Standard or Civil Engineer head and same arm lengths as Equipoise drafters.



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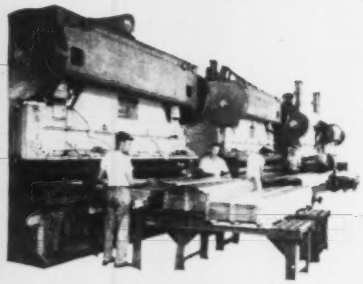

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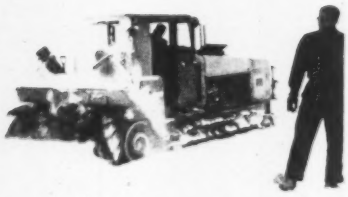
## . . . Icecap research seeks solutions to: . . .

HOW TO TUNNEL into icy cliff faces. Excavation is possible with pick and shovel, will be tried with cutting machines.



HOW TO DIG down into the snow surface. This machine can "blow out" a 15-ft deep trench. Covered it forms a tunnel.

HOW TO BUILD runways on the snow. Here hardness and depth of compaction of a treated surface is being studied.

HOW TO TRAVEL over the snow. Ski-equipped planes are one answer. Crawler-equipped weasels are another.

HOW TO LIVE under the surface. Here, housing made of corrugated metal pipe is revealed only by the tops of vertical access shafts and by the radar dome.

removed in a few days, and a snow tunnel results. Maybe it could be used for a highway, or a railway. Maybe housing could be built in it, or perhaps supplies could be stored in such cut and cover snow tunnels.

But how much does such a tunnel deform under the roof load or the sidewise movement of the icecap? Can it be insulated against heat? Are there better machines than this Swiss type to do the construction job? These are some of the problems under study.

At another nearby location studies are under way to determine how best to build an airstrip on the icecap. Both natural and artificial materials will be tried as wearing surfaces on top of base courses of snow blown into shallow trenches by the snow plow, a process that seems to provide automatic compaction. Tests of the hardness of such a base course are being made with an instrument on the order of an asphalt penetrometer, but on a larger scale.

Over here a pit 100 ft deep has been

excavated, and from its bottom a 7-ft-dia tunnel is being driven to obtain information on deformation under the constantly increasing snow load. Test specimens from the pit reveal that the surface snow has a density of about 0.25, which increases to 0.75 at the 100-ft depth. As it is compressed further and forms ice, the density continues to increase, but never to the ultimate because of trapped air.

An analogous project is concerned with icecap drilling techniques. One object is to obtain continuous core samples to a depth of about 1,500 ft, while another will be to measure, with instruments in the holes, such things as temperature, rate of closing and differential movement of the ice mass with depth. Compressed air instead of water or oil is being used to remove the ice cuttings, and special equipment has been installed to cool this air to the desired temperature. The drill rig has been equipped with various types of core barrels and bits in order to examine their relative efficiency.

Numerous as these operations are, viewed from the central camp site they are merely small interruptions in the whiteness, which ends only at the horizon—or does not end at all when that reference line disappears in wind-driven snow. Undoubtedly, the camp is one of the world's most unusual research stations—unique in physical makeup, of commanding importance in mission and lonely and remote in location. Yet remoteness is relative for, after our ski plane got into the air with a jet-assisted takeoff, less than two hours of flying brought us back to Thule where man-made structures act with reasonable normalcy instead of burying themselves out of sight in the landscape.

• **Other Greenland bases**—There aren't many places along Greenland's coast where a base the size of Thule could be developed, but bases useful in the trans-Arctic string need not be so large, and two such are Sondrestrom and Narssarssuk, respectively 750 and 1,200 miles south of Thule. Known during the war by the code designations of Blue West S and Blue West 1, they were first established as stops on the plane ferry route to Europe and as emergency landing spots—which to some degree they still are. Initially built in great secrecy by the contractor combine of McWilliams Dredging Co. and Nick E. Helmers, Inc., in 1941, they have been progressively improved and enlarged, with Sondrestrom receiving the greatest current attention partly as a result of being a stop and service point for the planes of the Scandinavian Airlines System on their flights from the U. S. West Coast to Northern Europe.

Sondrestrom is almost exactly on the Arctic Circle, and situated at the head of an 80-mi-long fjord. It can be approached by dropping down over the encircling mountains or, in good weather, by low-level flying up the fjord itself, which was the exciting route our C-54 took.

A single runway, but a good one, in a wide valley into which the narrow fjord opens out, is the traveler's welcome to Sondrestrom; that and an operations building and tower sheathed in corrugated aluminum which stands out against the dark hills in the background.

The majority of buildings on the base are new Schokbeton structures, the barracks being of two-story type. This year some $2.6 million is being spent on the base, covering among other things a terminal building, auto maintenance shop and an addition to the power plant. The largest item money-wise, however, is 13,000 ft of water mains, which will be connected to a new 65,000-gpd water supply. Also a new taxiway is presently under construction.

• **The radar lines**—All of this construction is of relatively permanent type. On the other hand, the warning and weather stations of the radar lines (for which, in this area, Metcalf & Eddy is architect-engineer and Drake-Merritt, the contractor) cannot be made permanent because, for the most part, the materials must be flown in. At these remote locations, personnel will have to rough it, regardless. Nevertheless, buildings will not be uncomfortable, consisting of prefabricated insulated panels assembled into a main structure 50 x 200 ft in plan, and a 20 x 40-ft "disaster" building some distance away in which personnel can subsist until help arrives in case anything happens to the main building. These installations also include a helicopter pad, fuel tanks, a water supply and sewerage system and, of course, the radar tower. Modest as they are, they cost upwards of $2 million each.

The arguments for continuing expenditures on a defense setup, which has been brought to a high state of efficiency and near completion, rest mostly on the changing weapons picture. As the trans-Arctic bases now stand, however, construction has brought them to a state of readiness for today's requirements. They can defend us as well as defense is now possible. How they will rate a few years from now is something else again. Probably not as high, which is why there may still be construction to do up north—if not on the existing bases, perhaps at new sites out on Greenland's icecap. All preparations are being made for that eventuality.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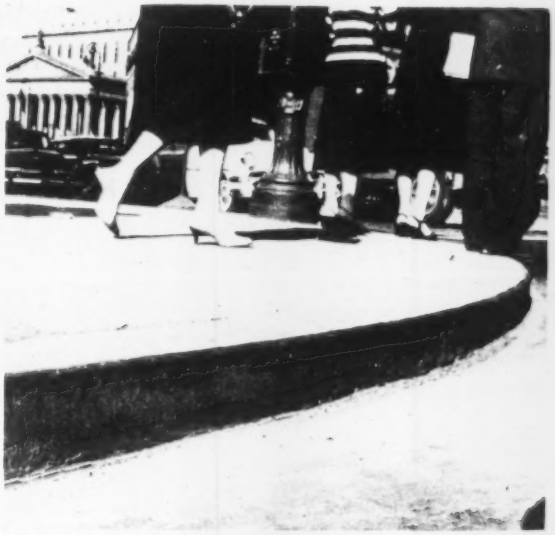


**To**—Durable double flange steel curbing backed by concrete.

# Steel Replaces Stone on New York Curbs

Following the removal of an elevated railway, New York City is installing nearly 7,000 tons of steel curbing along Third Avenue as part of the avenue's face lifting.

The curbing is a new section and differs slightly from steel facing that has been used for some years, in that the lower flange has been shortened to permit better flow of concrete up and under the flange.

Specifications call for a 9-in.-high section, weighing 15.5 lb per lin ft. Sections can be rolled to any desired length, but 20-ft sections are standard. Steel bars are butt welded to the back face of the curbing to anchor it to the concrete backup. Anchors are 6-in. long with a 2-in. end hook. They are welded to the curbing on 2-ft-6-in. centers, and staggered along the upper and lower lines of the back. At the ends, two anchors are mounted parallel.

Expansion joints are provided between sections of straight curbing. And at joints between radius curbing and straight lengths, sections are welded both at the top flange and along the face of the section.

Price-wise, the new facing is competitive with the older type section and cheaper than new granite curbing.

In the event that reuse is contemplated at a later date, granite would require redressing by stone masons. With the steel facing, the old concrete is broken away and no redressing is required.

The double flange angle requires no skilled craftsmen, and is easy to curve for intersections and depressed curb entrances at driveways. Large radii curbing are curved on the job; shorter radii are formed at fabrication shops. Double flange facing can be set at the rate of 350 ft per day, as opposed to a granite curbing rate of about 200 ft per day.

The first section of the older design steel curbing was installed 31 years ago, and no maintenance has been required.

**Straight and curved sections** can be stockpiled at the job site with no danger of damage.

**Workman** is shown setting curbing in place in preparation for concrete backfill.

Fast action on the Snake River—

# Brownlee Dam Will Be Rushed into Service

Just a year ago, the Federal Power Commission gave the green light for construction by Idaho Power Co. of three hydroelectric dams in the Hells Canyon region of the Snake River. Since then things have been humming at Brownlee Dam, first of the three to be built.

The contractor, Morrison-Knudsen Co., Inc., has accomplished these things in fast-paced action on the 395-ft high rockfill dam that will create an initial generating capacity of 360,400 kw:

- A complete construction camp was built in three winter months.
- A 2,555-ft long, 38x42-ft horseshoe tunnel was bored and the river diverted through it.
- Access roads were built or improved, including a bridge across the river.
- Most important of all, substantial progress has been made on powerhouse excavation and rockfill placing.

The construction tempo is bound to continue at an even faster beat if power is to be on the line in 1958 as planned. Contributing to feasibility of the fast time schedule is a scheme for letting the 1957 Snake River flood pass over dam fill already in place. And the contractor plans to install steel penstock liner from the downstream end instead of waiting for forebay excavation to reach necessary elevation. This alone might save a whole year.

**• Team effort** Almost immediately after approval of plans by FPC in November, 1955, Idaho Power awarded an incentive-type, cost-plus contract to Morrison-Knudsen for construction of Brownlee and Oxbow dams. And the next day the first construction equipment moved to the job.

Designing the project for Idaho Power is International Engineering Co. of San Francisco, an M-K subsidiary. International participated in preliminary designs for the FPC application process. Now it is working under forced draft on details of design of Brownlee as well as the other dams.

**• Sloping core rockfill** As designed by International Engineering, Brownlee Dam is a 395-ft high rockfill having a sloping impervious core. Crest length is 1,380 ft and total volume in the dam is 6,000,000 cu yd (5,000,000 cu yd rock, 500,000 cu yd impervious material and 500,00 cu yd gravel and sand in the filter zones).

The rockfill design is intended to make best use of material excavated from the spillway, intake, tailrace and powerhouse sites. Early estimates indicated that excavation from the spillway would total 1,600,000 cu yd, from the tailrace nearly 600,000 cu yd, from the powerhouse 400,000 cu yd and from the intake channel slightly less than 1,400,000 cu yd. This totals nearly 4,000,000 cu yd. Applying a 1.3 bulking factor, available rock will be slightly in excess of the 5,000,000 cu yd required.

Downstream slope of the dam is 1:4 horizontal to 1 vertical which is figured as just slightly in excess of the natural angle of repose. The rock will be allowed to assume its natural angle of repose. A berm of necessary width will be inserted to reach the desired overall average slope.

The upstream slope, lying in the reservoir area, is an extra safety factor, required to be flatter, 3 horizontal to 1 vertical. Here again the rock will be allowed to assume its natural angle of repose without reprocessing. Berms will be placed each 50 ft of elevation.

Impervious fill comes from spotty hillside deposits located some 5 mi from the dam. Permeability of this material is less than 0.1 ft per year. Minimum impervious fill thickness at the crest is set at 15 ft, reaching 50 ft near the bottom. Thickness of the impervious zone is established by figuring the minimum amount of percolation that can be tolerated. Additional thicknesses above this is a matter of weighing the economies of the water lost against cost of making the impervious fill. One controlling factor on impervious fill width is the desirability of having at least 100 ft of contact length between base of the fill and bedrock. Purpose of such contact length is to prevent the developing of piping.

Both above and below the impervious zone are filter layers that carry the water away. These protect the impervious zone by minimizing its leach-

**POWERHOUSE EXCAVATION** alongside the Snake River has been important feature at Brownlee Dam. Reason: early start on penstock tunnels and powerhouse construction is vital to 1958 completion.

# ce by 1958

ing into the rockfill areas. And in the case of the upstream filter zone it protects the impervious zone from being mixed with the rockfill.

The filter layers are simply successive thicknesses of sand and gravel of gradually increasing size. The fine filters next to the compacted clay impervious core are to be made of well graded materials ranging from clean fine sand to ¾ in. gravel. Both of these filters are 5-ft horizontal thickness. The coarse filters are made of materials ranging from medium sand to 3-in. gravel and are more than twice as thick as the fine filter. Between the filters and the rockfill areas are selected rock zones consisting of 1½ in. to 10 in. gravel and selected quarry rock.

The rockfill will almost all come from the necessary rock excavations. It is being sluiced by hydraulic monitors—some tractor mounted and some skid mounted. Purpose of the sluicing is to develop point to point rock contact by washing out smaller particles. This, when properly done, restricts future settlement of the fill to a nearly negligible amount. Volume used at Brownlee is roughly four times as much water as rock.

The impervious zone reaches down to rock foundation, with the foundation being grouted. The downstream rockfill section on the other hand is supported on natural riverbed deposits more than 100 ft thick. These deposits consist of boulders, gravel and some intermixture of sand. This particular natural material is considered to be as good as—if not better than—filled material could be. Only concern would be for sand lenses that might contribute to the development of piping. Extensive borings have indicated that such lenses do not exist in any appreciable amount.

The spillway will be excavated into the left abutment. Capacity is in excess of 300,000 cfs—maximum flood of record is 89,700 cfs. The spillway crest will be topped with four 32x50-ft radial gates. And three outlets controlled by 23x23-ft radial gates will pierce the spillway's ogee crest making possible 139-ft drawdown from full reservoir. Normal maximum drawdown will be 101 ft which gives 1,000,000 acre-ft of live storage. The spillway channel will be paved with concrete and it will terminate in a flip bucket.

The powerhouse will have four 90,-

## Background

**Over the past months plans for developing this section of the Snake River have become a symbol of the public vs. private power controversy. Public power proponents have favored a single high dam at Hells Canyon. This would include about the same amount of installed capacity as the Idaho Power three-dam scheme. But it would also add carry-over storage which, over a several-year cycle, it is claimed, would help downstream generating plants.**

**In answer to this, proponents of the Idaho Power Company plan, point out that it will have considerable regulatory effect on the flow in the river which will also benefit downstream plants. Moreover, the plan includes substantial flood control benefits (for which Idaho Power has not asked for and is not getting any federal reimbursement). And it has the advantage of developing the river much more quickly than would be feasible under a federal program. Thus, it is claimed, power generating and river control benefits accrue much earlier, without irretrievable loss of flowing water.**

**Almost 10 years ago—in June, 1947—Idaho Power applied to the Federal Power Commission for a preliminary permit for a plant at the Oxbow site. After investigations, a license application was made in late 1950. The Oxbow plant was to be part of a five-dam plan for developing the Snake River stretch between Weiser, Idaho, and Hells Canyon. Later—in November, 1952—the Oxbow application was amended to reflect a change in the scheme from a five-dam to a three-dam plan. Finally, in May, 1953, formal license application was made on Brownlee and Hells Canyon dams.**

**After lengthy hearings, the FPC granted a license to Idaho Power for the three-dam scheme in August, 1955.**

**Due to the years of license delay resulting from the Hells Canyon controversy, Idaho Power now finds itself in the position of not being able to meet its system demands from its own generating resources. Instead it must purchase power from Utah Power & Light and from the Northwest power pool. And even with completion of Brownlee in 1958, Idaho Power will have very little, if any at all, surplus generating capacity.**

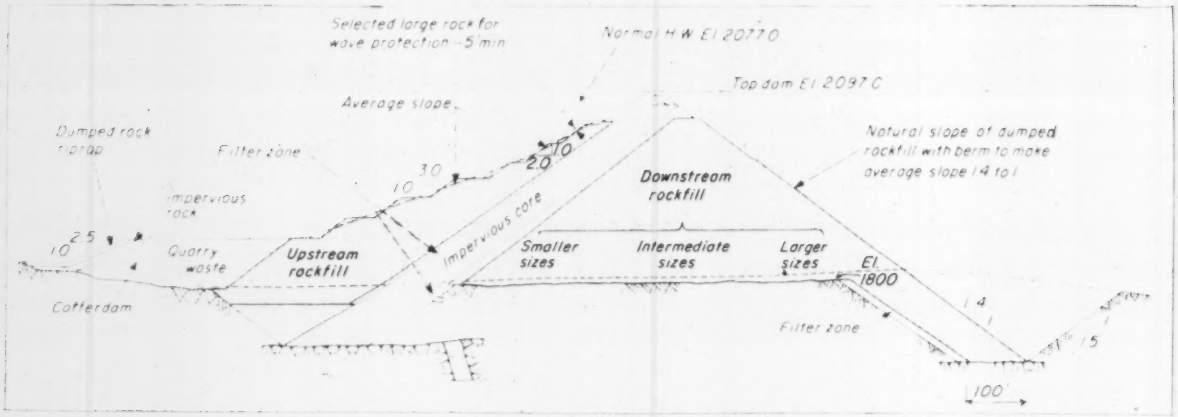
**Idaho Power's system peaking capacity is now 373,050 kw, and its 1956 system peak load was 450,000 kw. The nature of the load is such that the system has a relatively high (74%) load factor. Thus, early need for Brownlee stems from existing load together with expected system growth.**

**The three-dam plan that Idaho Power is currently constructing is largely run-of-the-river generation—although not entirely so. Total initial capacity will be 783,400 kw (360,400 kw at Brownlee, 151,000 kw at Oxbow and 272,000 kw at Hells Canyon). Ultimate installed capacity will be 1,175,000 kw, with peaking capacity of 1,300,000 kw.**

**Brownlee, which is the farthest upstream, will serve as the regulating reservoir. Its 1,500,000-acre-ft reservoir includes 1,000,000 acre-ft of live storage. And, except in extremely dry periods, Brownlee will fill each year. In fact, during flood season, 1,000,000 acre-ft of storage can be made available for flood control purposes. Provisions of the FPC license stipulate that by March 1 each year the reservoir drawdown must provide 500,000 acre-ft for flood control storage. And if the Corps of Engineers deems it necessary, an additional 500,000 acre-ft drawdown will be made on or before April 2. Then as the flood season nears its finish (about July 1) the reservoir will be allowed to fill.**

**The Snake River at this point is not subject to extremes of high and low flow. Fairly effective regulation is provided by ten major reservoirs upstream that total 6,432,700-acre-ft capacity.**

## . . . Brownlee Dam will be the highest U. S. rockfill




**HIGH ROCKFILL**—highest in U. S.—has a sloping impervious core. Downstream rockfill section is supported by natural deposits. Spillway is cut into left bank. Powerhouse is on the right. Fish must be trucked past the dam during construction.

100-kw generators. Turbines are Francis type rated at 144,000 hp under 255-ft design head. Normal head will be 277 ft.

• **Early construction**—First work at the site was boring a 38-ft dia, 2,555-ft long diversion tunnel. Feature of the tunnel job was a truck-mounted jumbo that worked both faces. After one face was drilled and loaded, the truck moved around to the other. It needed tractor assistance up the 30% grade to the intake. Then the other face was drilled while the muck at the first face was removed.

Diversion was accomplished this past October by filling a narrow neck of the river. A more permanent cofferdam fill is now being built at the upstream toe of the rockfill area while coretrench excavation is proceeding.

Diversion was accomplished nearly a month behind schedule—but M-K officials are confident this time can be regained. Reason was some difficulty in shaping and concreting the tunnel intake. And installation of an electric fish screen below the tunnel's downstream portal took extra time. Migratory fish going upstream will be trapped at the fish screen and carried by truck around the construction area.

At the same time as the diversion tunnel construction started, work began on access roads and the construction camp. Access was available on the Oregon side using fairly adequate existing roads. On the Idaho side some 6 miles of new road had to be built including a 120-ft high fill that saved a substantial construction distance. A bridge was built over the river at an early date.

Perhaps the most remarkable early construction achievement was swift action in building the necessary service buildings and facilities. Prefabricated metal shop buildings and wood frame office, bunkhouse and messing facilities were planned, procured and erected to the point of occupancy in just 10 weeks following award of the contract. This was during the winter. And it included construction of benches on the steep Idaho shore hillside. Excavation from the diversion tunnel outlet channel was used to form the benches.

**SLUICING DUMPED ROCK** removes fines and develops point-to-point rock contact. Water used is about four times rock volume.

• **Construction sequence**—For best construction economy, rock should be excavated from the intake, spillway, etc., and transported by minimum haul for placing in the dam without stockpiling. Thus, excavations from the tailrace should be used for the lower portions of the dam, excavations from the spillway can be used all during the fill operation, and excavations from the intake should be used for the higher portions of the fill. To allow enough time for construction of the powerhouse and installation of equipment, powerhouse excavation must be done first. In fact, it is now finished or very nearly finished.

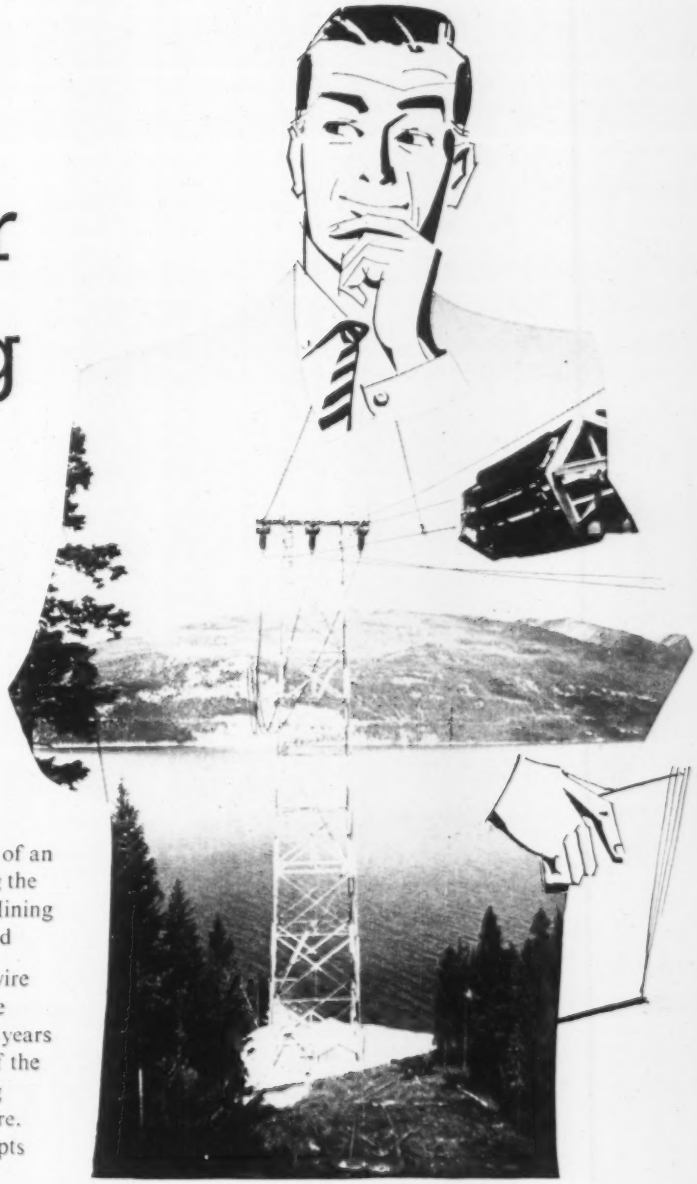
Because the intake excavation is not expected to be down to grade for more than a year, the penstock tunnels are being drilled and the steel liners will be installed from the powerhouse end. This interferes to a degree with other powerhouse construction operations. But it might save as much as a year in over-all completion time.

The four 27-ft dia, 540-ft long penstock tunnels are now being drilled. First one is expected to be completed by January 15 with the others following shortly thereafter. These tunnels will be drilled only as far as necessary for steel lining. They will not actually be holed through until the intake excavation reaches penstock intake elevation.

Immediately following tunnel excavation, the 24-ft dia, steel penstock tunnel liners will be installed. These

# Consider Roebling First

*. . . when you consider a suspension system of <u>any</u> kind!*



Across Kootenay Lake in British Columbia stretches one of the longest single suspension spans in the world. Roebling fabricated the high-strength conductors. Two miles in length, it is part of an 87-mile power transmission line connecting the power plants and mine of Consolidated Mining and Smelting Company of Canada, Limited

All structures and systems supported by wire members are of interest to Roebling, whose activity in this field goes back many, many years and is steadily increasing in scope. Some of the suspension applications on wnich Roebling has served in whole or in part are shown here. Within each of these categories, new concepts of design and operation do and *can* exist.

ANTENNA SYSTEMS | SELF-PROPELLED CARS | AERIAL TRAMWAYS | SKI LIFTS AND CHAIR LIFTS | PIPELINE BRIDGES

Thus, whatever your present problems are—or might be—in moving people or materials of any kind, or whatever "rivers" you contemplate crossing, you will do well to enlist Roebling's assistance and incomparable experience. An inquiry to John A. Roebling's Sons Corporation, Trenton 2, New Jersey, makes suspension system cooperation immediately available to you.

**ROEBLING**

*Subsidiary of The Colorado Fuel and Iron Corporation*

# Steel Pipe Replaces Wood

The first pipe to be erected is shown being readied for connecting to the bulkhead section. Eight heat-treated tie-rods, anchored to huge "drags," or counterweights, hold the bulkhead steady against a static head of 23 psi and a thrust load of 560,000 lb.

High in the Pocono mountains of northeastern Pennsylvania lies Lake Wallenpaupack, largest lake wholly within the state. Long popular for fishing and water sports, Lake Wallenpaupack is less well known to the public for the reason it was created—as a source of water for a Pennsylvania Power & Light Company hydro-electric generating station.

When the utility constructed the lake 30 years ago, they built a mammoth wood-stave pipe line, approximately 15 ft in diameter, from the dam face $3\frac{1}{2}$ miles to the hydro-electric plant. It was the world's largest wooden tube for its length at the time. Bethlehem supplied nearly 4,000 tons of circumferential steel rods, fittings and saddles for this line.

In recent years, the condition of the wood reached a point where it was no longer economical to continue maintenance on the lower 8500-ft length of the wooden line. It was decided to substitute steel pipe. The contract for design, fabrication and erection of a 14-ft 8-in. diam line was awarded to Bethlehem.

## Well-equipped Shop

Field work began in early Spring of 1956 when Bethlehem set up a full-scale fabricating shop along the right-of-way. Hoisting equipment included a 30-ton guy derrick with three-drum electric hoist, four truck cranes and a tractor hoist. Welding operations required three submerged-arc welding machines, 44 electric and 32 gasoline and diesel welding machines, three mobile generators and four mobile compressors. The Bethlehem working force numbered well over 200 men at times.

With the shop ready for business, curved plates, $\frac{3}{4}$ in. thick and in 32- and 40-ft lengths, began arriving from our Steelton, Pa., plant. Five were required for each section of pipe. The shorter plates were used for the numerous bends; the 40-ft plates for tangent pipe.

# -Stave Line

Demolishing the old wood line. About one-half of the saddles were re-used for the steel pipe.

Assembly of each pipe length began with fitting-up, using special falsework jigs to assure true diameter. Then came automatic welding of longitudinal seams, mitering the pipe ends where necessary to provide for changes in direction, beveling in preparation for butt-welding, and welding on of external stiffener rings. Welds to be subjected to pressure were radiographed.

Meanwhile, the entire wooden line was emptied, a pre-fabricated steel bulkhead was installed, and the section of the wooden line not being replaced was filled with water to preserve the wood during the construction period. Then began demolition of the lower portion of the wood stave line.

## "Railroad" Speeds Erection

The pipe lengths, weighing 20 tons in the case of the 40-ft tangent sections, were hauled from the storage yard over a specially built track. A small but powerful gasoline locomotive pushed the lengths quickly into place where they were jacked off the cradle truck and into the precise position for welding. Highly skilled welders made the necessary passes on the circumferential joints. A subcontractor handled the application of protective lining and coating materials to the pipe.

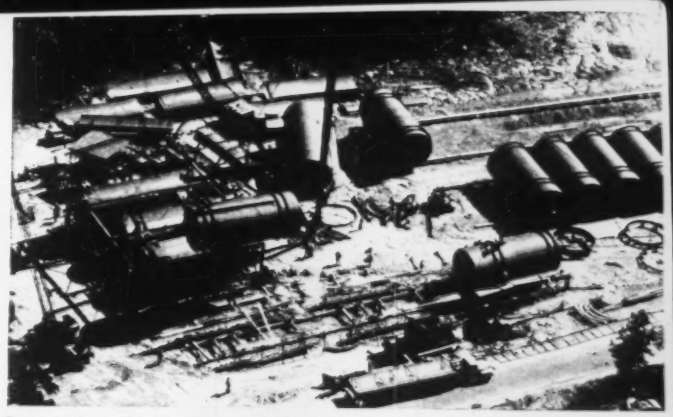
Upon completion of the new portion of the pipe line, the old section was emptied of water. This permitted workmen to enter the bulkhead section and cut away the steel diaphragm. Finally the dam gates were opened, allowing water to rush through the line and start PP&L's powerful turbines humming once again.

Bethlehem is an old hand at the design, fabrication and erection of large-diameter pipe for hydro-electric and industrial plants, as well as municipal water-supply systems. For more information, please contact the Bethlehem sales office nearest you.

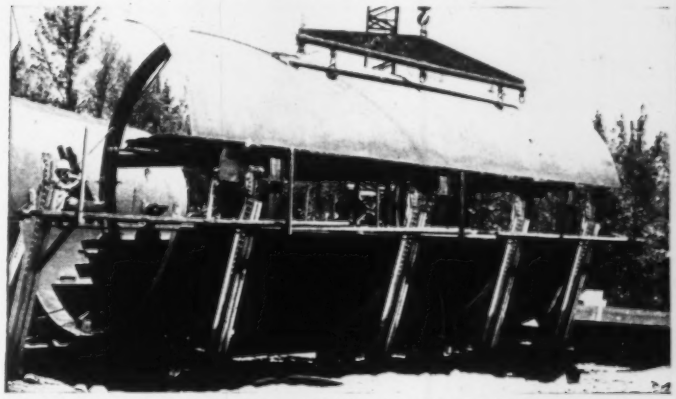
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation*

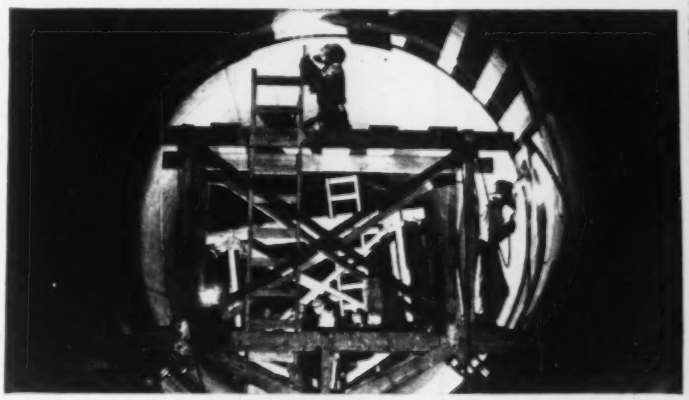
**BETHLEHEM STEEL**



Formed plates, the assembling and welding operations, and storage of finished pipe, can be seen in this view of the fabricating yard.

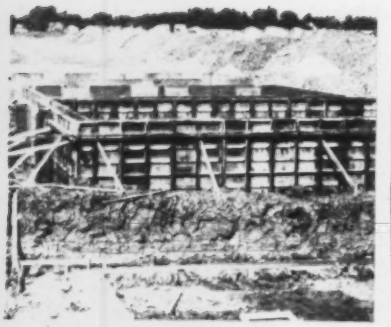


The plates were fitted up, then tack-welded prior to welding by the automatic submerged-arc method. Stiffener rings were attached later.



Rolling scaffolds permitted three welders to work a single joint simultaneously from the inside. Weld passes were also required on the outside of the giant tube.

A portion of the nearly completed welded-steel line.



**WACO Forms Foundations for 1¢ per Square Foot**

Mr. Louis Castiglia of the Columbia Concrete Company of Norridge, Ill. Mr. Castiglia says: "Our cost per foundation for forms amounted to 1¢ per square foot. We purchased two sets of 8' foundation forms for a 400-home project, and, at the present time, each set of forms has given us over 150 pours!" Mr. Castiglia feels that Waco forms are adaptable to any type of foundation wall regardless of size.

The Columbia Concrete Company purchased 2,000 square feet of forms on their original order. Since that time, the company has increased its total square footage to approximately 35,000 square feet. Columbia Concrete Company uses Waco forms on both residential and commercial projects.

Many other contractors, like the Columbia Concrete Company, report that using Waco Concrete Forms has allowed them to compete most favorably with other types of basement construction. These contractors not only save labor-costs during construction . . . they also find that Waco Forms, with their quick-alignment grooves, give seams that require no sanding.

Investigate these Waco Forms before you rent or buy. With the wide choice of forms available from Waco, you're sure to get the right form to do every job *right*.

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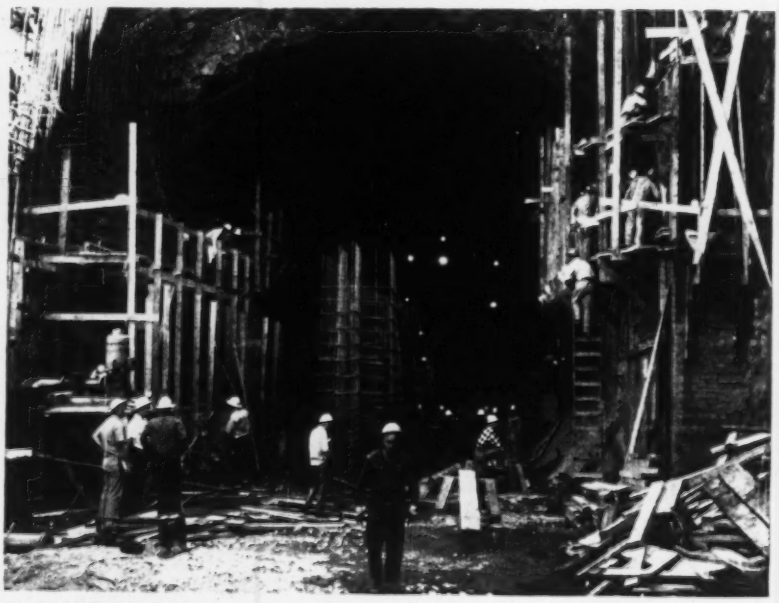
## Diversion will not be complete

**RIVER DIVERSION** takes place in this narrowed river channel. Gap was closed early October. But it is expected flood flows will top uncompleted dam.



**DIVERSION TUNNEL** intake portal is framed in concrete to accommodate gates for later sealing the flow. Portal rock scaling and concreting delayed diversion.

thick (¾ in. to 1¼ in.) steel shells will be backed by about 18 in. of concrete.

Controlling element on fill in the river is the 1957 flood season. Ideally, diversion tunnels would be drilled to accommodate maximum flood. But, at Brownlee that was considered to be too expensive and time consuming. Accordingly, the diversion tunnel will handle some 25,000 cfs flow. Spring floods in the Snake River run from 35,000 to 55,000 cfs. Excess flow will be passed over the partly completed fill. This is believed to be the first time in U. S. dam construction history where flood flows are purposely to be routed over a partially placed dam of this type.

Between now and the 1957 flood season, the plan is to excavate the core trench to bedrock and backfill with dam material up to about El 1800 (bedrock is at about El 1700). When proper level is reached the impervious zone will be covered with a 10-ft thick layer of rock. A 200-ft wide channel will be left for the flood waters to pass through.

During the flood season, fill work can and will continue on each abutment. It is hoped that about 1,800,000 cu yd of fill can be placed by July 1—th. end of the flood season.

Exact elevation to which the impervious fill will be carried before flood

# "Best for handling big rocks,"

## says Cosmo Constr. Co., President

WHILE building an interchange to connect U. S. Highways 33 and 66 with the Oklahoma Turnpike near Tulsa, Cosmo Construction Co., Oklahoma City, ran into soft shale and clay, plus 12' layers of drill-and-blast rock and solid limestone. In the deepest cut, which was 41', excavation even uncovered a vein of coal.

To move these tough materials from deep cuts, Cosmo brought in 3 shovels, 4 crawlers, 2 graders (one an Adams), and three 22-ton capacity C Tournapull Rear-Dumps. The Rear-Dumps *profitably* handled *all* dirtmoving on this 400,000-yd. job.

### Rear-Dumps take rock "beating"

Clay seams in layers of limestone created unforeseen difficulties, and contributed to making job exceedingly tough for Cosmo. The clay cushion took the "bite" out of dynamite blasts. So, extra blasting was necessary and fragmentation was poor. A crane, equipped with a ball, had to break the big, hard-to-handle rock fragments down to size for the dipper, so shovel operator could pile a good load into the Rear-Dumps.

Low rear-entry and 8'9" wide-bowl made Rear-Dumps an easy target for fast shovel-loading. Triple-layer, all-steel floor of Rear-Dump body was particularly important on this job, because it could safely withstand pounding of heavy big-chunk rocks dropped by shovel.

### "Right equipment can lick any job"

Rear-Dumps' ability to travel fast, at speeds up to 32 mph, was a big asset in speeding hauls. Although hauling conditions were tough, these Rear-Dumps continuously maintained good production. For instance, working a ½-mile cycle, they hauled about 1500 cu. yds. of coarse, blasted material per day out of one 34' cut. According to Cosmo President, Clyde L. Ottinger, "LeTourneau-Westinghouse Rear-Dumps are best there are for handling large rocks and for long hauls." He added, "Good supervisors and the right kind of equipment can lick any job." Cosmo seems to have plenty of both!

### Rear-Dumps . . . good heavy-duty haulers

For those big hauling jobs ahead, investigate Tournapull Rear-Dumps. They're top production haulers that can work profitably in rugged terrain or adverse weather conditions to give you more daily work output. Available in 3 sizes to fit your particular jobs: 11, 22, and 35-ton models. Write for details on these outstanding heavy-duty haulers.

Front-wheel drive and big 4-wheel air brakes let operator back Tournapull Rear-Dump safely to edge of dump area. Finger-tip switch activates electric hoist motor that raises and lowers body under positive 2-way control. As bowl swings below and behind rear wheels, to 66° dumping angle, it unloads rocks safely . . . prevents load from rolling forward against wheels.

Wide bowl provides easy target for shovel operator . . . speeds up shovel-loading and greatly reduces spillage. Low rear-entry into bowl lets shovel swing in and out at low dumping heights, also permits loading big boulders from dipper top with minimum effort or danger.

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

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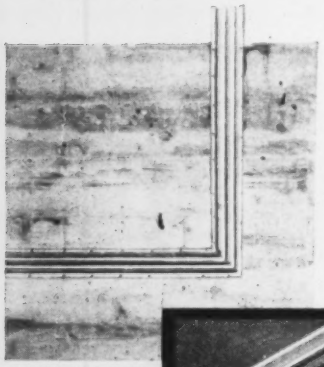
WHERE QUALITY IS A HABIT

# Waterstop *in place in seconds!*



LABYRINTH WATERSTOP after first pour has been made and form removed. The grooves receive the concrete from the second pour, providing an interlocking joint.

Just a few seconds were needed to nail this LABYRINTH WATERSTOP to the form... just a few seconds and water seepage worries were over before they could ever have a chance to start. LABYRINTH WATERSTOP forms a waterproof bond between two pours. The corrugated ribs bond firmly with the concrete.

LABYRINTH WATERSTOPS are made of flexible polyvinyl plastic... that has superior weathering qualities, is not affected by temperature changes and chemical activity.

LABYRINTH WATERSTOPS are easy to work with, can be cut to any desired length. "L" and "T" joints can be welded with just a hot knife. Find out now how your costs can be cut... and end your seepage problems. Just mail the coupon to:

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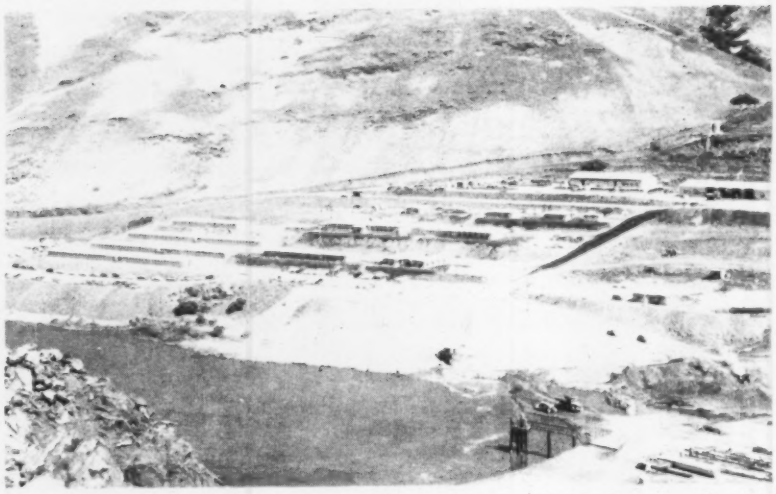
## . . . It's a fast job on the Snake



**CONSTRUCTION CAMP,** built in less than 3 winter months, is situated on benches on the steeply sloping river bank. Benches were made mostly of fill from diversion tunnel.

season has not yet been determined. Factors influencing this elevation include rate of progress of fill work and amount of big rock available to protect the already-placed impervious fill. The higher the fill is before the flood season, the bigger the rock size that will be needed to protect the impervious fill. For example, maximum possible height to which the fill will be carried is El 1810; rock 2½ ft dia will be needed to hold against flood current expected at this level.

After the 1957 flood season, work will be resumed on the entire dam. Next goal will be to have the fill above the lower spillway outlets before the 1958 flood season. But if the fill is not above the spillway outlets, and an extremely wet year is encountered, water might top the dam with disastrous results.

And the tag end of the 1958 flood must be captured to permit power generation in the fall of 1958.

There are several critical operations that must be completed if power is to be generated at Brownlee in 1958. And this goal imparts a decided sense of urgency to construction operations. Continued effective construction effort will accomplish the necessary tasks in the available time, unless there is some unforeseen catastrophe that results in irrecoverable delays and serious disruption of the schedule.

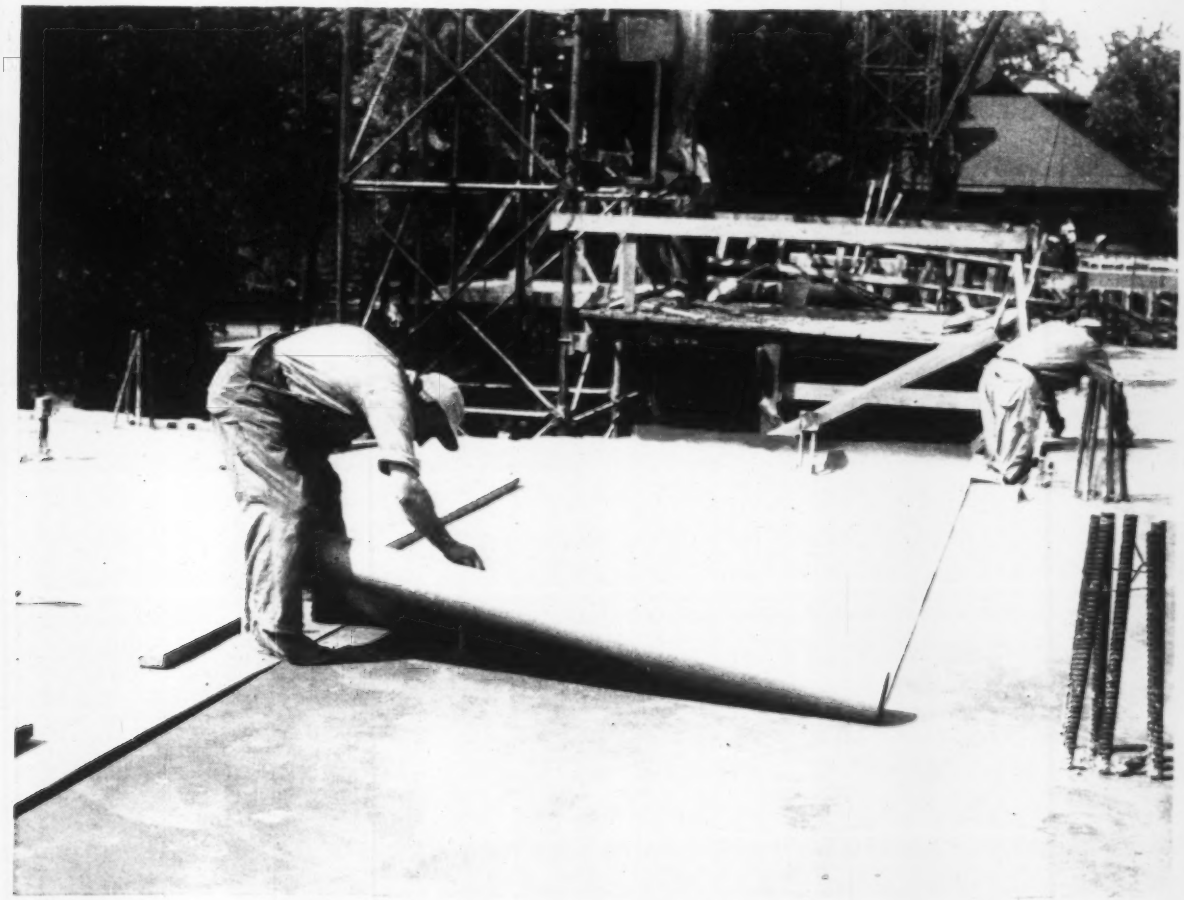
• **In charge**—F. A. Woodhead is chief consulting engineer for Idaho Power Co. in over-all charge of the Hells Canyon development. Fred McCormick is assistant superintendent of power plant construction and engineer in charge of the Morrison-Knudsen contract. Gomer Condit is resident engineer for Brownlee Dam.

**RUNNING THE JOB** are Glenn C. Johnson (left), resident manager for Morrison-Knudsen, and Fred McCormick, Idaho Power Co. engineer who is supervising the M-K contract.

Design is being carried out by International Engineering Co. of San Francisco for which Torald Mundall is chief engineer, G. L. Sudman is chief design engineer and H. Y. Hsu is project engineer.

Serving as consulting engineers on the project are L. C. Steele, J. P. Growdon and Harold Stearns.

Construction work was initiated by Morrison-Knudsen under the direction of the late C. B. "Woody" Williams. Representing M-K on the job is Glenn C. Johnson, resident manager; M. E. Brown, construction manager, and Russell Martin, project engineer.



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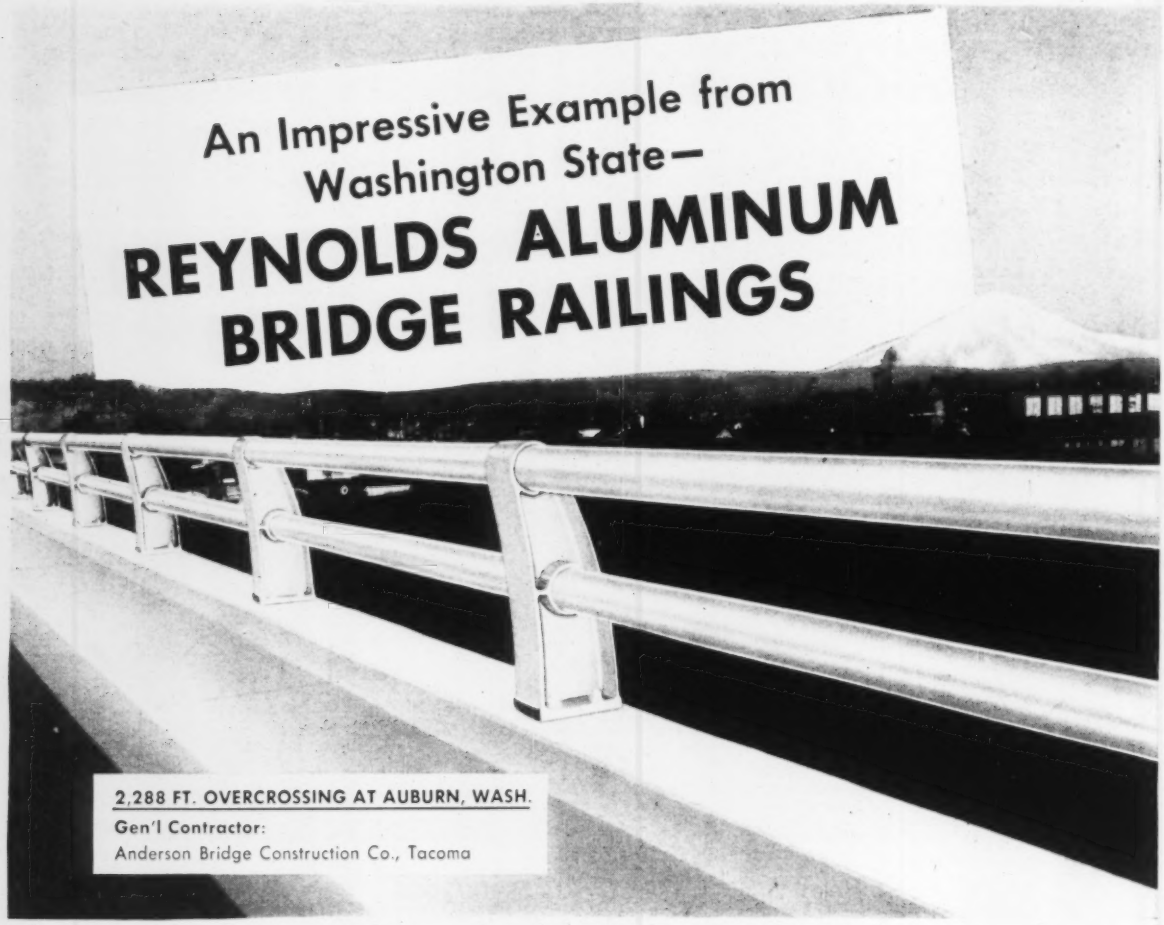


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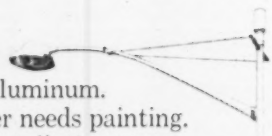

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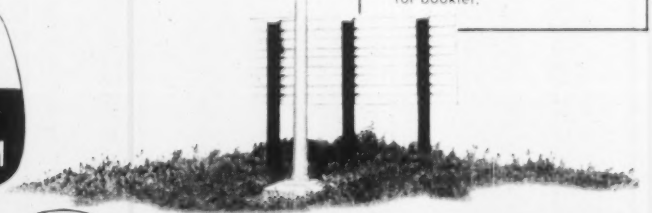
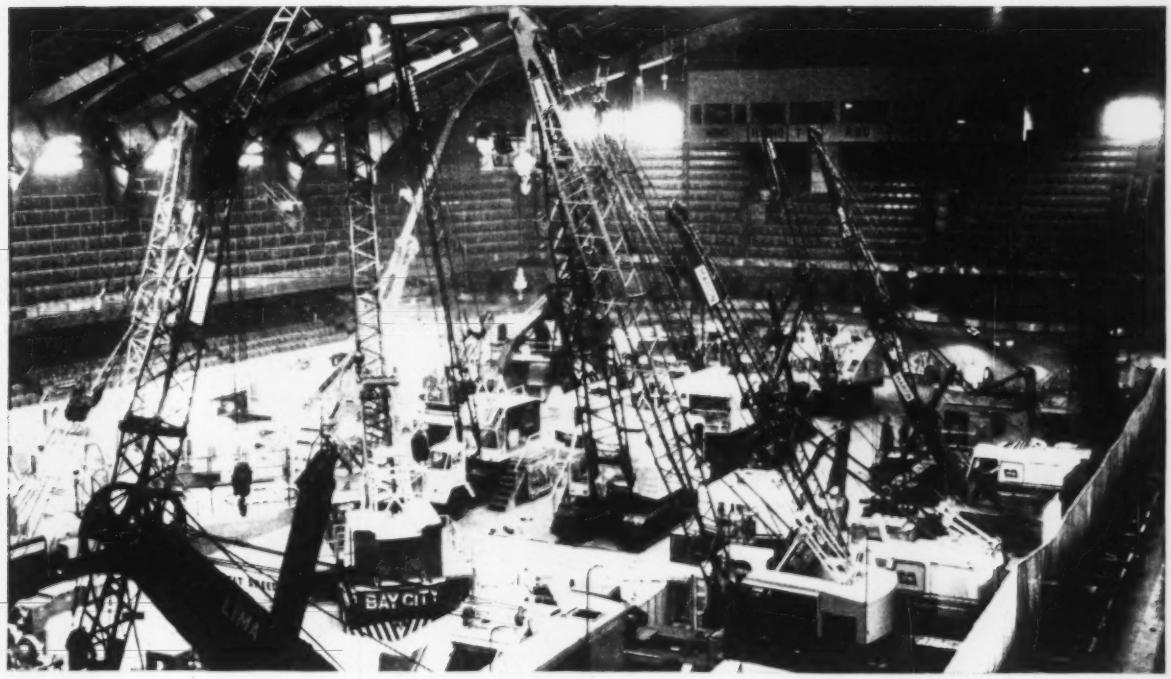


# REYNOLDS ALUMINUM

See "CIRCUS BOY", Sundays, NBC-TV Network.




**Dramatic collection of cranes and shovels is only part of . . .**

# Road Show's $21-Million Chicago Display

ENR Staff Report

At a cost of nearly $9 million, 277 manufacturers of equipment, components and materials put more than $12 million worth of exhibits on display at Chicago last week in a show that was tops on several counts:

• It was by far the biggest show of machinery ever put on anywhere.

• It was certainly the biggest show ever put on entirely under cover, completely filling the 22 acres of covered space in Chicago's huge International Amphitheater.

• It probably attracted more visitors—considering that almost all of them were closely connected with one industry and the show was not advertised for the general public—than anything short of Chicago's own World's Fair of the early 30's. Average number of visitors was more than 22,000 daily.

Although to the visitor the theme of size was characterized by the first exhibit his eyes met as he entered the amphitheater—the central display of cranes and shovels with their booms raised to full 60 ft or more heights—the focus was very definitely and very frankly on its business aspects, both for the exhibitors and the visitors. "We're not here for love" was an acknowledged theme, and the show's management even turned to a real innovation in registration procedures to make this point clear—and useful.

Every visitor registered on a specially prepared card designed to show not only his general field such as contractor, engineer or official, manufacturer, producer, or distributor, but to pin point his work. Thus contractors identify themselves with one of five categories: general, bridge, grading, asphalt paving, or concrete paving. Engineers are listed as Federal, State, County, City, or consulting. The other major classifications were similarly split up.

The cards are catalogued by automatic classification machines, capable, at the touch of a button, of turning out accurate lists of visitors in each or all classifications. These lists can be obtained from the Construction Industry Manufacturers' Association—which with the American Road Builders Association (see page 21) managed the mammoth display.

• **Expensive set-up**—There was no really accurate set of figures on what the manufacturers actually spent to bring their $12 million worth of exhibits to Chicago, and set up the elaborate displays in which they showed their wares. CIMA officials, however, set the cost of the show at about $9 million. This takes into consideration the expense to the exhibitors of dismantling the huge machines at their plants, of packing and transporting the parts, of reassembly at the show, and of repeating all this a second time to get the machines back to the plant (or to customers). It also considers the direct sales costs incurred by the displays—salaries of display personnel, expense of entertainment and housing—plus the rental of space at the convention hall.

• **Space eater**—Actually, out of the acreage under roof in the amphitheater, the exhibits took up 11 acres—the rest was given over to aisles, refreshment stands and just places to rest. The amphitheater—only recently augmented by the addition of the huge Donovan Hall on its extreme south end—presented a problem to visitors that is a familiar one to many. It took literally miles of walking to really see the displays.

By comparison, the 1948 Road Show also at Chicago, occupied 30 acres of space (including aisles, etc.) but was almost entirely out of doors at Soldiers Field and in an adjoining parking lot.

Like the 1948 exhibit, the Road Show provided counterpoint to the concurrent annual meetings of ARBA, CIMA and the Associated Equipment

(Continued on page 60)

# from Atlanta to the Land of Lakes

VISQUEEN white opaque being placed on Minnesota Highway 169, south of Shakopee.

Contractors everywhere have found the way to substantial savings in highway construction with VISQUEEN film.

Four mil VISQUEEN film in widths up to 32 feet is rapidly replacing other materials as a curing blanket. The reason? 80% less weight than other curing blankets – no absorption of water – lower first cost—many more reuses– concrete 10% to 19% stronger.

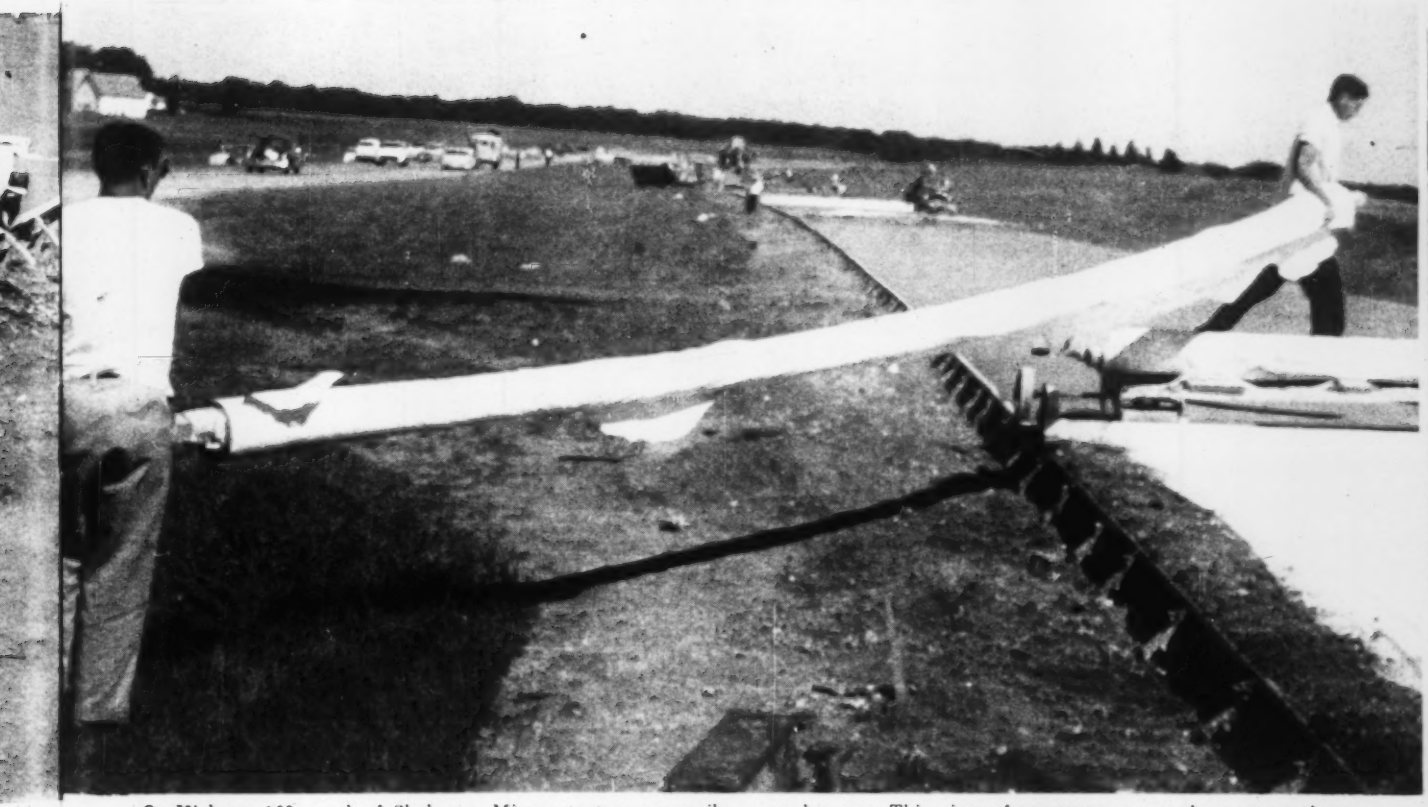
VISQUEEN provides quick protection for machinery and prepared roadbed when showers break—and there's no added cost. Keeps frost out of roadbeds on cold fall and winter nights.

There's nothing like VISQUEEN for curing concrete! Look at the proof.

Here's why you will save important money when you cure with VISQUEEN film:

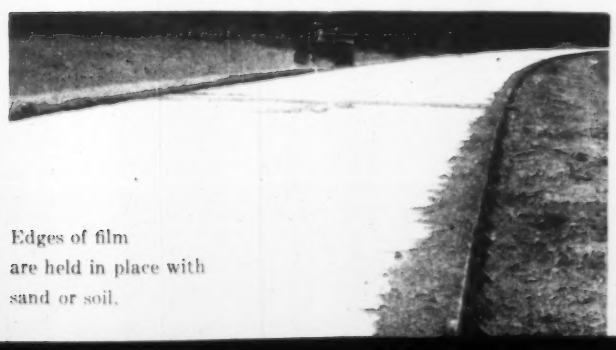
1. Much lower initial cost.
2. Much less weight. Four mil VISQUEEN film weighs only one fifth as much as other widely used material. 1000 square feet weighs less than 20 pounds.
3. Much easier to handle. Will not absorb water. 300 foot rolls 24 feet 4 inches wide can be unrolled and rerolled by two men. No time-consuming, costly drying needed.
4. Much greater reuse. In Minnesota a 300 foot roll 24'4" wide was reused seventeen times. Contractor says he expects at least six more reuses.
5. Much stronger concrete. State testing laboratories compare cores from same immediate areas where white opaque VISQUEEN and a competitive material were used. In every case cores from concrete cured with VISQUEEN surpassed others by margins that ranged from 11% to 19%.

VISQUEEN film used as curing blanket on Atlanta expressway. Two men unroll it from steel pipes. After use, film is rewound on same pipes.



On Highway 169, south of Shakopee, Minnesota two men easily handle 300′ roll of four mil white opaque VISQUEEN rolled on a 3″ wooden core. This piece of VISQUEEN was used seventeen times during 1956 road-building season—then stored for reuse in 1957.

**VISKING COMPANY** Division of Union Carbide and Carbon Corporation
PLASTICS DIVISION World's largest producers of polyethylene sheeting and tubing
P. O. BOX 1410 TERRE HAUTE, INDIANA



Edges of film
are held in place with
sand or soil.

information request tag

VisQueen®

clip this tag— EN2
attach to letterhead, mail.

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BRIGHT COLORS
RIGHT INTO
CONCRETE
FLOORS...

*And get greater hardness at low cost . . . easily!*

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***Ready to use . . .***
***No pre-mixing with cement***

Not a paint . . . ART-ROC troweled into the cement surface holds attractive colors safe from attack by cleansers, alkalis or rust. Provides a tough extra-hard surface at no extra cost . . . both for interior and exterior installations. Floors or pavements with ART-ROC are bright and attractive . . . easy to clean, economical to keep up

***Colors . . . Hardens . . . Beautifies . . . Dustproofs!***

Just sprinkle on the leveled and floated fresh concrete surface, then work into the surface with a wood float and finish with a steel trowel. You'll be amazed at the brilliance and depth of the two beautiful colors: Tile Red and Spanish Green.

Remember . . . ART-ROC is not just a surface film, but color that's built-in to stay . . . and it's so easy to use!

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- Porches
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## At the Road Show . . .

THE FRONT END of a Euclid S-5 dwarfs two early visitors and the tiny electric "go cart" they used during pre-opening inspection of displays.

Distributors, who held their formal sessions during the week in the downtown Hilton Hotel.

• **Not startling**—To most highway construction men, there were no startling new innovations in machinery or materials at the show.

Some of the machines were, of course, immense—the 50-ton Euclid, Dart and Oshkosh rock body trucks, some of the big carrying scrapers, rollers, the 6-yd Michigan tractors—shovel and cranes. But most of what was shown represented either continuing improvement of established lines—or even only the latest models, brought out within the last year or so.

Every machine shown, of course, incorporated some changes or improvements, all aimed at higher production, better maneuverability, greater speeds. And many of the manufacturers of components, and of materials that go into the roads themselves, could show similarly improved—and some new—developments.

The now well-established trends toward mobility—both on the job and between jobs—rubber tires, speed and ease of operation, rather than great increases in size, were readily apparent.

What really was startling, of course—even to men long used to seeing the machines at work—was the total impact of such a display, so much in one place at one time—all of it brightly shined and polished and up to its very best manners.

• **What was different**—There was much of great interest to the industry in some of the new models and the improvements. Without attempting to list all of these changes, here follows a brief summary as ENR's editors saw them:

### Tractors and Dozers

Euclid has come out with a 19-ton C-6 Dozer, which is basically the same but about half the size of the C-12 that was introduced last year. Powered by a single 218-hp GM diesel, the machine has a torque converter, a three-range power-shift, and is steered by oil clutches and disc brakes, and has a planetary reduction gear at the drive sprockets. The C-6 features a miniature version of the C-12's hydraulic track recoil. Without springs or mechanical units, the hydraulic recoil serves the dual purpose of absorbing horizontal impact during operation and of keeping the tracks tight at all times. Principal innovation is the use of a nitrogen filled cylinder behind the grease unit rather than the conventional compression springs. The combination of hydraulic and pneumatic units is said to add greatly to operator comfort and to completely eliminate difficult mechanical track adjustments with the too familiar long, heavy wrench. Slack tracks are tightened with a grease gun—just hook on to the filler plug and pump. As the hydraulic unit is filled, the tracks are pushed into position. Any excess grease is automatically ejected. Removal of a single cover plate permits replacement, if necessary, of the nitrogen cylinder.

•

Minneapolis-Moline, for 50 years a farm machinery manufacturer, stepped into the construction machinery field with both feet—as have several of its

(*Continued on page 62*)

# "Our costs are lower on this Federal Reserve Bank job"

***Architects:*** James, Meadows & Howard, Buffalo, N.Y.; Eggers & Higgins, New York, N.Y. ***General Contractors:*** William L. Crow Construction Co., New York, N.Y. ***Waterproofing and Roofing Contractor:*** Jos. A. Sanders & Sons, Inc., "Buffalo's Live Wire Roofers"

## "...thanks to Gold Bond Insulation Roof Board,"

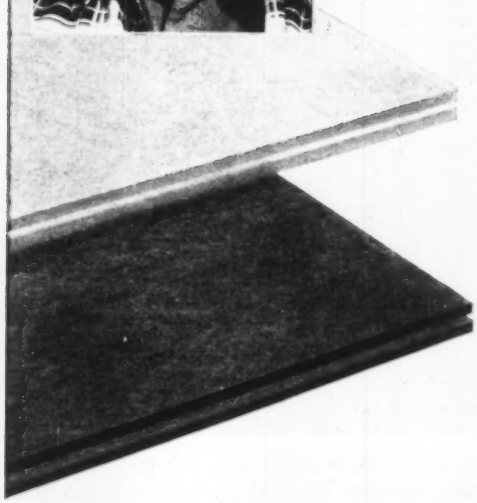
*says* **Joseph A. Sanders, Jr.,** *Roofing Contractor*

Mr. Sanders, Vice President of Jos. A. Sanders & Sons, Inc. used approximately 35,000 square feet of Gold Bond Insulation Roof Board on the new $1,000,000 building of the Buffalo Branch of the Federal Reserve Bank of New York. He says:

"We've found our *costs are lower* with Gold Bond Roof Board. It soaks up less of the mopping material. The mopping goes faster because of the board's smooth surface. Gold Bond Roof Board *stands up* under the loads of working crews and equipment. It helps us deliver in the finished job the full insulation value specified."

Gold Bond Insulation Roof Board comes in many sizes and forms—thicknesses from ½" to 2"; shiplap, offset and square edges.

To see what this roofer's Gold Bond story can mean for *you*, call your Gold Bond® representative or write Dept. EN-27, National Gypsum Company, Buffalo 2, New York.



**INSULATION ROOF BOARD**

**NATIONAL GYPSUM COMPANY**

*For information on Gold Bond "Firefighter®" Roof Deck, see page 63*

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**BUILDING PRODUCTS**

**Glider**
**BLUE PRINT RACK**

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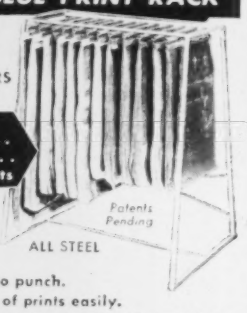


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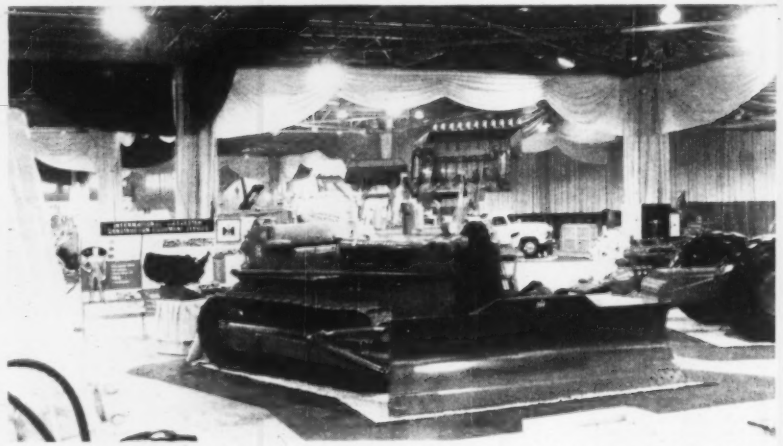
## At the Road Show . . .



RESTING ON WHITE STONE and surrounded by an artificial lawn, a brightly polished International TD-24 looks its best for show visitors.

competitors. Basis of the M-M entry is its Model 445 Industrial Wheeler, powered by a 57 brake hp engine, and modified to include integral power steering, transmission with 10 speeds forward and two reverse, heavier axles, a 12 volt electrical system and a three point hitch for attachments. Displayed at the show were several models of the tractor, mounting dozer blades, backhoes, shovels, rippers and other attachments. The machine features a selection of rear-mounted, constant running hydraulic pumps. A variation of the "Wheeler" is trademarked the "Golden Kat", a crawler unit with the same basic engine, available either with mechanical clutch or torque converter.

•

One of the newest tractor attachments shown was Caterpillar's side-dumping bucket for a front-end shovel loader attachment. With the left side of the bucket built as a sloped unit, the bucket digs straight ahead, is then raised vertically to its top height of about 10-ft. A hydraulic ram mounted just behind the bucket then releases a floating pin on one end of the bucket, and tilts the bucket sideways to dump. The model shown is a 1½ yard bucket. (The sloped side is responsible for the slight capacity increase over that of a standard bucket).

"Cat" officials said the bucket and its tilting attachment can be made in bigger sizes for larger machines. The advantage claimed is that shovel-loader can work at a stockpile and load a truck without swinging 90 degrees to fill the body.

Breaking with tradition, Caterpillar Tractor Co. was showing for the first time its new rubber-tired tractor, dubbed No. 668. This versatile four-wheel drive machine weighs 22 tons, has eight forward speeds up to 26 mph, four reverse speeds and delivers more rim pull than the company's conventional rear-wheel drive DW 20. The machine will mount "Cat's" standard accessories, including bulldozer, winch and other attachments, and also will serve as a prime mover with scraper units. The same 300-hp tubocharged engine used in the DW 20 and DW 21 track-type machines is mounted in the 668.

•

Indicative of the size to which crawler-bulldozers are trending is Euclid's relatively new TC-12. With two separate engines giving a total of 436 hp, and equipped with a three-speed torqmatic drive, the unit mounts a 15-ft straight bulldozer blade in front, a hydraulic ripper on the back, and weighs 89,781 lb.

### Earthmovers

LeTourneau-Westinghouse gave Road Show visitors the first look at its new LW-30 truck, so new that the one shown is the only one built so far. It will be the first truck in the company's extensive line of earthmoving equipment, and as such is wholly new in design. Of 30-ton capacity, the LW-30 is built with unusually high road clearance, 2 ft, yet has a low center of gravity. Elimination of a front axle accounts for the high clearance. Driven on its rear

(Continued on page 64)

# 8 million pounds of food protected by Gold Bond "Firefighter" Roof Deck!

**KROGER WAREHOUSE,** Charleston, West Virginia, ***General Contractor:*** Rust Engineering Co., Pittsburgh, Penna.; ***Roof Deck Applicator:*** Hoge-Warren-Zimmerman Co., Cincinnati, Ohio.

The new Kroger Warehouse in Charleston, West Virginia, holds enough solid food to feed a city the size of Denver for a week. A Gold Bond "Firefighter" Gypsum Roof Deck protects this valuable supply from fire.

Over 153,000 sq. ft. of incombustible gypsum roof deck forms a natural fire shield over the entire building structure. Gypsum cannot burn and will not warp or transmit high temperatures when exposed to heat and flame.

Gold Bond® "Firefighter" Roof Decks are poured-in-place. Construction is fast....*as much as 50,000 sq. ft. of gypsum can be poured in a single day.* These decks, installed by approved contractors, take full load capacity in less than an hour because of quick setting action. Whether you design a pitched, barreled or flat roof, "Firefighter" Roof Decks are completely adaptable. Their low dead load permits lighter supporting structures and allows substantial construction savings.

Learn how "Firefighter®" Roof Decks can help you in your building plans. Send in coupon below for full details. National Gypsum Company, Dept. EN-27, Buffalo 2, New York.

***For information on Gold Bond Insulation Roof Board, see page 61.***

**Gold Bond**
**BUILDING PRODUCTS**

**"FIREFIGHTER"**
**GYPSUM ROOF DECK**

**NATIONAL GYPSUM COMPANY**

NATIONAL GYPSUM COMPANY, Dept. EN-27
Gentlemen: Send me Technical Bulletin No. 589 with complete details on "Firefighter" Roof Decks.

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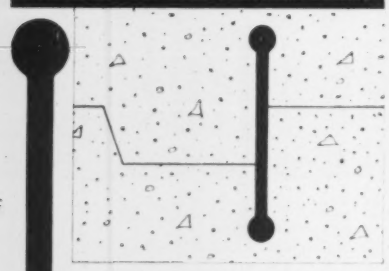
RUBBER
WATERSTOPS
FOR MASONRY CONSTRUCTION JOINTS



Williams Efficiency Waterstops are made from Natural Rubber Stock, and designed for maximum effectiveness in any type of cast-in-place construction joint. They will bend around corners—will not tear from shear action. Tensile Test: 3990 lbs.; Elongation Test: 650%. Available in rolls up to 80 feet in length. Field splicing is simple. Williams Waterstops can also be furnished in Neoprene for industrial uses where resistance to oil and other injurious wastes is desirable. These highly effective Waterstops are now in use in hundreds of industrial plants, commercial and public buildings throughout the country.

*See Sweet's, or Write for Information.*

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## At the Road Show . . .

IN A SETTING typical of the show but unusual for heavy construction equipment, a huge rock body truck is displayed amid draperies, bunting and lights.

wheels, the unit is powered with a Cummins V-8 turbocharged 375-hp diesel engine, has nine speeds forward, and utilizes the same differential used in the company's other earthmovers. Air-hydraulic suspension is used in lieu of springs to absorb shock loads and smooth out the riding qualities. Steering is full power, hydraulic. The short wheelbase, 128 in., distributes the load evenly to the four wheels, and permits the unit to turn in a 45-ft-dia circle. A roomy cab, power actuated operator's seat and dynamic braking contribute to the safety of operation. The LW-50 will not be available for delivery until it has been further job-tested.

•

All seven new machines in its "Michigan" line of earthmoving equipment were shown by Clark Equipment Co. They include three tractor-drawn scrapers with 10.5, 18 and 27 cu yd capacities; two new tractor shovels with 4 and 6 cu yd capacities; and two new tractor dozers. All the equipment is rubber-tired, and a feature of the line is interchangeability of the prime mover and other parts, since the machines are being built in series varying with size and horsepower. Thus, within one line, tractor-shovel, scraper and dozer have the same horsepower in the prime mover, and tires and engine parts are interchangeable. All models—now in production—feature full hydraulic drives and planetary gearing at the wheels for greater power transmission. The torque converter drives require only a minimum of controls for the operator.

•

R. G. LeTourneau, out of the road-building machinery business for the last five years, in accordance with the terms of the agreement under which he sold his earthmoving equipment interests to Westinghouse Air Brake Co., was back at the Road Show with his revolutionary electric wheel idea. Shown on a big flat bed cargo hauler, the design is being planned for earthmoving units also. Sold under the trade name of ARGEE, the units contain a diesel engine under the hood directly connected to an electric generator under the operator's seat. Current is carried to a D.C. motor on each of the six wheels of the unit. In addition to the drive, all other mechanisms are also electrically actuated, including steering and braking. Steering is by means of a single pushbutton, so that the operator's panel is unusually simple.

## Precision Needle Valve For Corrosion Service

A bubble-tight needle valve for corrosion service—made of Polyvinyl Chloride, Teflon, Kel-F and 18-8 stainless steel—is designed for precision control and recording of settings, states the maker.

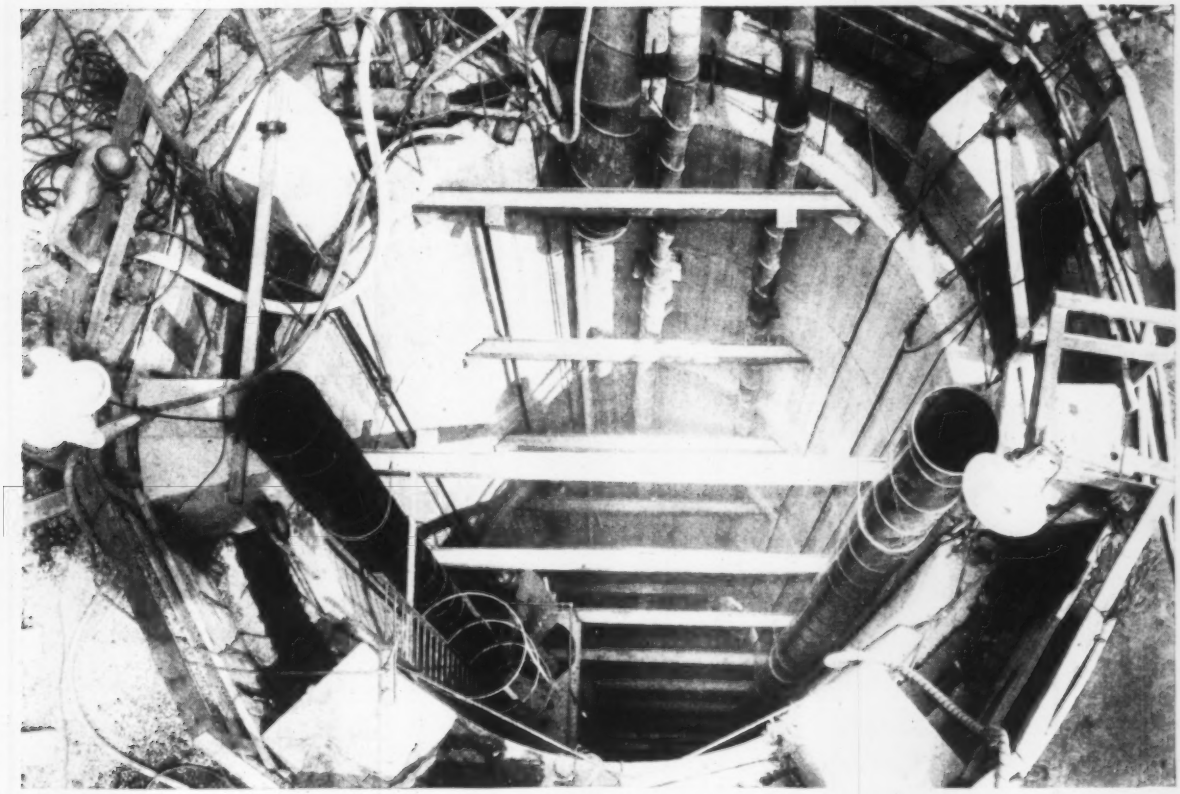
Compatible with standard fittings and piping methods, of any material, the nontoxic, nonflammable valves are made to meet the exacting requirements of fluid systems where corrosion problems exist from internal, external, chemical, electrical or natural corrosive elements, claims the manufacturer. All contact with liquids is restricted to corrosion-resistant plastic materials.

A micrometer-type adjustment is provided by coupling the calibrated body and indicator handle to fine threads to position the needle. The valves come in ¼-in. and ½-in. female pipe sizes and ¼-in., ½-in. and ¾-in. O.D. male tube connections.

According to the manufacturer, the valves operate in temperatures up to 170 F, and up to 170 psi, or higher, for intermittent duty. CHEMTROL CORP., 1513 W. EL SEGUNDO BLVD., COMPTON, CALIF.

# ACES IN THE HOLE

## *...Pay Off in Tunnel Construction*



Photo, courtesy Pittsburgh Post-Gazette

There's no gamble when you rely on Naylor Spiralweld pipe to handle vital air requirements in underground construction.

Here is a light-weight pipe that is easy to handle and install, yet gives you the performance you'd expect from heavier-wall pipe. The answer lies in the exclusive Naylor lockseamed, spiralwelded structure which creates a reinforcing truss that makes this distinctive pipe stronger and safer in service—throughout the full range of Naylor pipe diameters from 4 to 30 inches.

Installation of Naylor Spiralweld is further simplified and accelerated through the use of Naylor one-piece Wedgelock couplings which provide the fastest method of connection on the market.

That's why it will pay you to look into this pipe and coupling combination for push-pull ventilation, high and low-pressure air and water lines, dredging, hydraulicking and materials handling.

Write for Bulletins No. 507 and No. 513.

# NAYLOR

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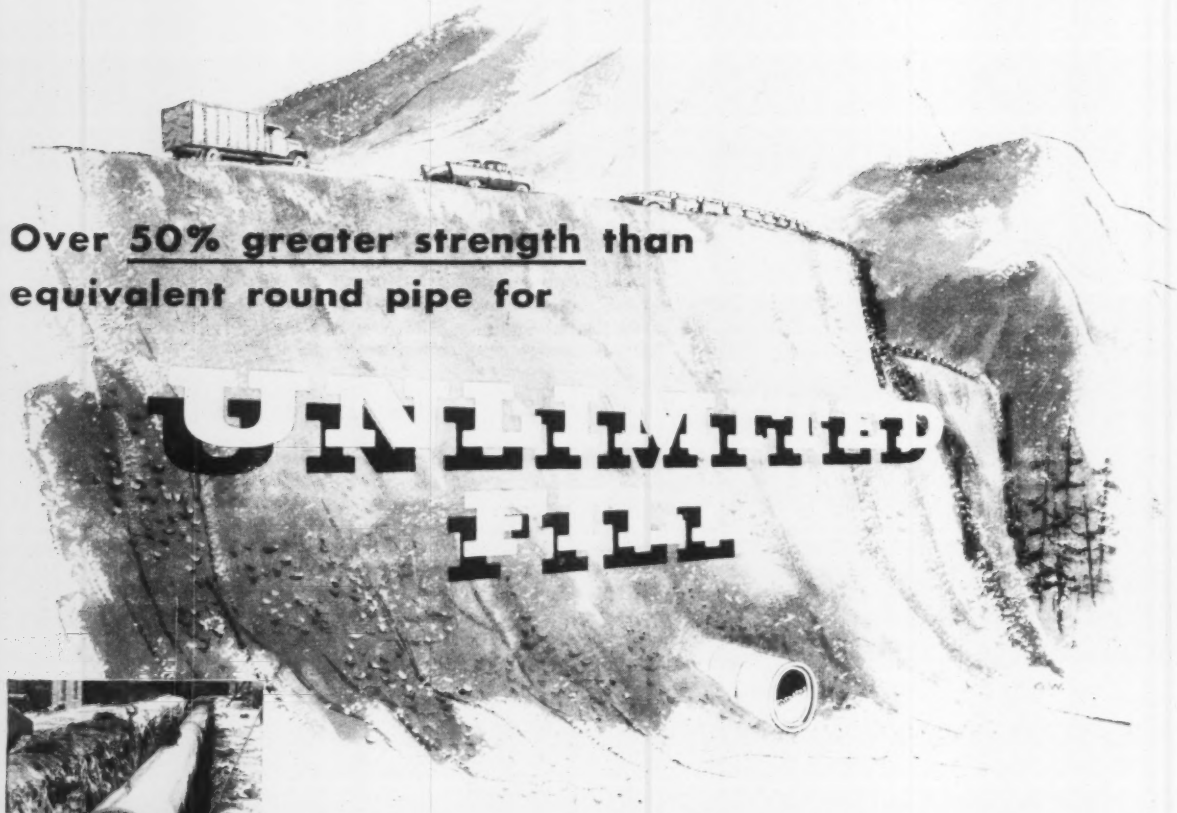
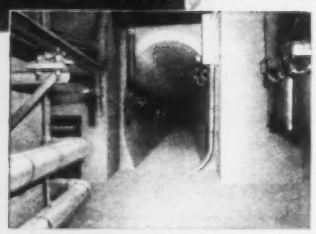



**Over 50% greater strength than equivalent round pipe for**

ANOTHER EXAMPLE OF *Progress in Concrete*—

# HI-HED REINFORCED CONCRETE PIPE



HI-HED makes a perfect utility gallery. Pre-cast HI-HED units speed installation and cut construction costs.

*Our technical staff will be pleased to assist you with your pipe problems.*

Deep cuts and high fills are often encountered in maintaining the minimum grades which are consistent with good highway design. In the past, drainage structures under high fills have proved delaying, cumbersome and costly. But now, American-Marietta offers you a practical solution—HI-HED Reinforced Concrete Pipe with *50% greater strength than its round pipe equivalent.*

When used as storm or sanitary sewers HI-HED permits greater self-cleansing velocities in dry weather periods. In urban areas HI-HED makes full use of available cross-room without disturbing existing utilities. Find out more about HI-HED, the stronger, versatile, elliptical pipe that's destined for an important role in the multi-billion dollar highway program. Write today.

*Write today for new HI-HED Brochure*

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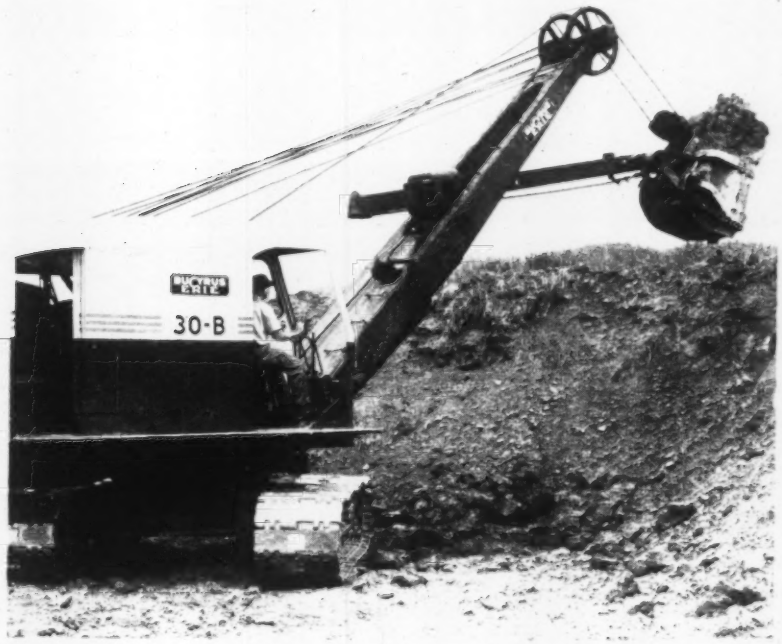
## At the Road Show . . .




**CRANE-EXCAVATOR** in the 1-yd class is this new Bucyrus 30-B. The machine is a readily convertible shovel, dragline, clamshell, crane or dragshovel. It is available in five sizes of crawler mountings and also as a carrier-mounted transit crane rated at 35 tons.

### Cranes and Shovels

The Lima 1250 three-cu yd shovel is available in either standard or high-lift models. In the standard it carries a 28-ft boom, 22-ft handle and 3-cu yd dipper, in the high-lift it carries a 45-ft boom, 32-ft dipper stick and a 2½-cu yd bucket. As a crane, the 1250 can swing a 200-ft boom and 50-ft jib. With a 60-ft boom at a 13-ft radius the machine has a lifting capacity of 60 tons. To facilitate transportation, the rig can be knocked down into units of less than 30 tons each and the unbolting of four axle caps permits quick removal by the machine's own boom of both crawler assemblies and axles.

•

New attachments shown for the versatile Gradall machine include a set of "fingers" that enable the wrist-action boom to pick up a piece of steel much like a human hand, rotate it in any direction, and place it accurately.

•

Although the trend in some heavy equipment lines is to shift from crawler to rubber-tired mounting, Unit Crane and Shovel Corp., for the first time is producing its 3-yd shovel on crawlers, with attachments to convert it into a backhoe, dragline or clamshell.

### Paving

In the field of bituminous paving, Blaw-Knox is introducing its new Model PF-45 Black Top Paver, with a 4-ton hopper capacity and designed specifically for small to medium-sized paving jobs. Mounted on rubber tires and powered by a 37-hp engine, it has been developed chiefly for paving streets, parking lots, alleys, driveways, playgrounds, building floors, secondary roads, park drives and sidewalks. It has a total of 10 forward and reverse speeds, and can lay hot or cold asphaltic material in 8-ft to 11-ft pavement widths. Its paving speed is 10 to 62 fpm; its travel speed is 8 mph.

•

Following a three-year period of development and field testing, Iowa Manufacturing Co., is starting production of its high-speed Cedarapids Bituminous Paver, which is claimed to incorporate over 40 new features that give a new concept to bituminous paving techniques. On the Kansas Turnpike last summer one of these models successfully laid pavement at speeds up to

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TYPICAL **WELD-CRETE** APPLICATION

**National Brick Co., Terra Cotta, D.C.**

Here Weld-Crete was used to bond new ¾" concrete topping directly to old, badly chipped and spalled floor slab which had been subjected to ceaseless heavy truck traffic. Plant shut-down time eliminated as Weld-Crete enabled National's own mechanics to do job over week end.



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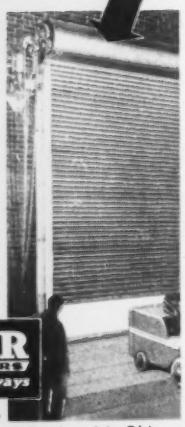
**Heavy galvanizing**—*1.25 ounces of pure zinc per sq. ft. of metal, by ASTM standards*—gives Kinnear Steel Rolling Doors many extra years of carefree service life. And Kinnear's **special Paint Bond** prepares the zinc surfaces for quick, thorough, lasting paint adhesion. Insist on Kinnear Doors.



KINNEAR ROLLING DOORS
*Saving Ways in Doorways*

**The KINNEAR Mfg. Co.**

**1820-40 Fields Ave., Columbus 16, Ohio**
**1742 Yosemite Ave., San Francisco 24, Calif.**




## At the Road Show . . .

102 tpm. According to its maker, the most important single feature of the paver is its electrically-vibrated screed, which "irons" the bituminous material into a smooth, uniform, high-density mat. The one-piece screed vibrates at 5,600 impulses per minute. Paving width can be adjusted from 6 ft to 14 ft in 1.5-in. increments. Automatic depth feelers assure the proper amount of bituminous mix in front of the screed at all times, without requiring any attention from the operator. It is crawler mounted, powered by either a 65-hp gasoline or 61-hp diesel engine, and has a self-cleaning 9-ton capacity hopper.

## Engines

Example of the rapidly-expanding lines of motors in all sizes now available is Continental Motors, which announced at the show that it now makes 16 diesel engines ranging from 34 to 222 hp.; 80 gasoline engines, ranging from 14 to 280 hp.

•

Detroit Diesel Co unveiled its newest production line engine, a 375-hp turbo-powered diesel unit especially for earth-moving machinery. The engine, part of Detroit's "6110" line, is rated 289 hp engine, souped up to the 375 hp.

## Miscellaneous

In the field of pile driving, McKiernan-Terry displayed its DE-30 diesel pile hammer and its new compound C-5 hammer. The self-contained diesel features a universal drive cap that can be used on either the DE-20 or the DE-30 and that will accommodate several sizes of pipe, H beam or timber piles. The compound hammer, with only four moving parts, represents a radical departure from the conventional design of both single and double-acting hammers. The C-5 hits a 16,000 ft lb blow at the rate of 110 times per minute, but weighs only 11,800 lb and requires only a 30-hp boiler or 585-cfm air compressor.

•

Joy Manufacturing Co. showed a self-propelled wagon drill mounted on rubber tires. Built for quarry work as a companion to its crawler-mounted units, the rubber-tired machine mounts drills up to 4 in. in dia.

•

On the very important side of reducing maintenance problems, one example was SKF Industries' introduction of a positive method of lubricating spherical roller bearings in sizes from 140 mm (O.D.) and larger. The lubrication is done by means of a circumferential groove in the center of the outside diameter of the outside ring. Equally spaced holes are drilled into this groove, to allow lubricant (oil or grease) to move around the groove, through the holes in the outer ring. The outward flow of the lubricant also is claimed to have the advantage of flushing away old lubricant, abrasive dirt and moisture.

•

In the field of small drainage structures, Republic Steel Corp. is introducing a complete line of corrosion-resistant corrugated metal pipe. Now in production, and available in diameters of 8-in. to 84-in., the zinc-clad metal pipe is impregnated inside and outside with asbestos fiber and coated with hot-dipped asphalt.

•

One of the newest entrants in the ditching field is the Gar Wood-Buckeye Model 403 utility ditcher, crawler mounted, ladder type, and engineered for easy operation with its foot-pedal steering. Designed for ditching sewer lines, conduits and other service lines, it digs an 8- to 12-in. wide trench 5 ft deep, or a 16-in. trench 4 ft. deep.

## Small Tools

In the very small—but highly efficient—tool class is a new vibratory roller, displayed by Maginnis Power Tool Co. The machine consists of a tiny 20-in. dia by 16-in. face roller, which with water ballast and a 6.5-hp engine weighs a total of 350 lb. Frequency of vibration can be varied from 2,400 to 7,000 vibrations per minute, to produce a maximum compactive effort up to 13,000 lb. The roller has water-bath attachments to make it especially useful in asphalt work, and the vibrating unit is damped off from the engine and frame for greater operator comfort. The same company also has introduced a plate-type vibratory compactor that delivers up to 7,000 lb of compactive effort.

•

With an eye toward the growing importance of prestressed concrete, Stow Manufacturing Co. has developed a really tiny concrete vibrator—a unit carrying a 1¼-in. dia head at the end of its long flexible shaft. Electrically powered, the machine is especially designed to work in very narrow, tight

(*Continued on page 72*)

an asbestos-cement product

## *Hours saved in the trench*
## *dollars saved on the contract...*

## ...because Transite Ring-Tite Pressure Pipe handles easily, positions automatically

• Transite® Pressure Pipe with Ring-Tite® Coupling is so quickly and easily installed —you save hours of costly trench time . . . shave dollars off job costs!

Transite goes in faster, because the Ring-Tite Coupling speeds and simplifies joint assembly. Workmen simply smooth rubber sealing rings into grooves, lubricate the pipe end, and pull pipe and coupling together. Shoulders on the pipe itself position the ends in the joint automatically. The result is a joint with positive seal, yet remarkably flexible! And these rubber rings can't blow out.

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You can assure city officials and engineers of peak performance, year after year. Transite Pipe, an asbestos-cement product is strong, durable, highly resistant to corrosion.

**For further information about Transite Pressure Pipe and Ring-Tite Coupling, write for Booklet TR-160A. Address Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.**

**Johns-Manville TRANSITE PRESSURE PIPE**
WITH THE **RING-TITE** COUPLING

Truscon "O-T" Shortspan Steel Joists are designed and manufactured in accordance with the specifications of The Steel Joist Institute and the Simplified Practice Recommendation (S.P.R.-94-30) on open web steel joists as issued by the U.S. Department of Commerce, Bureau of Standards. Load-bearing capacities are predictable and dependable!

# REPUBLIC

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*World's Widest Range of Standard Steels*

# PROTECTED!

## Every Truscon "O-T" Steel Joist is backed by The Steel Joist Institute Seal of Approval

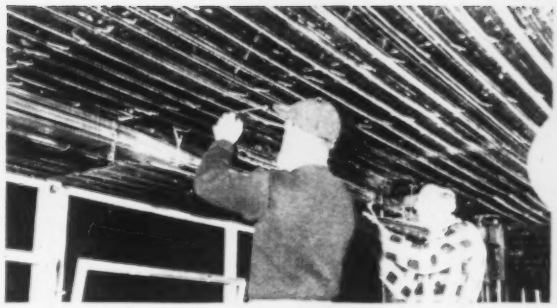
STEEL JOIST INSTITUTE APPROVED SJI

## Be safe...avoid inferior quality. Specify approved Truscon "O-T" Open Truss Steel Joists. (SHORTSPAN SERIES)

## Write for facts...

# STEEL

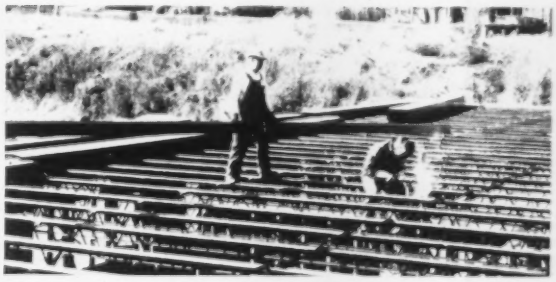
*and Steel Products*



Truscon Metal Lath attaches directly to the underside of Truscon Steel Joists. When plastered, it becomes a fire-resistant ceiling. Metal lath and plaster membrane fireproofing is vital throughout modern buildings. No design or architectural effect is too intricate for Truscon Metal Lath. It can be cut, shaped, formed and curved into simple and complex contours. Send coupon for more facts.

•

Truscon Ferrobord® Steeldeck is welded or clipped directly across the top of Truscon "O-T" Steel Joists. Ferrobord roofs large areas quickly, whether flat, pitched or curved. It comes in lengths long enough to span three or more purlins. When laid, its flat surface is ideal for application of insulation and built-up waterproofing. Light, strong, fire-resistant roofs are the result. Send coupon for design data.



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☐ "O-T" Shortspan Steel Joists ☐ Ferrobord Steeldeck
☐ Metal Lath and Accessories

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# Do You Have This PIPE PROTECTION PROBLEM?

Underground piping must be protected against destructive forces of corrosive soils and electrolytic conditions. Normally, coal tar coating as called for in AWWA specifications C-203 and C-204 would be hot-applied at a coating mill. However, there are times when the volume of pipe involved or the distance of a coating mill make this impractical from a time and cost standpoint.

## *You'll find the ANSWER with* TAPECOAT® *. . . the Quality Coal Tar Coating in Tape Form*

TAPECOAT is the widely-accepted alternate material that is equivalent to mill-applied hot coal tar protection. With this easy-to-use material, protection can be applied in the field by your own men, because technical know-how, kettles and special crews are not required. You save time and money while providing the long-life protection called for.

TAPECOAT is easily applied, using a torch to soften or bleed the pitch which gives both bond and protection. Available in widths from 2" to 24", it is spirally wrapped or cigarette wrapped around pipe, pipe joints, couplings, conduit, cable, and insulated piping.

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Originators of Coal Tar Coating in Tape Form

1551 Lyons Street
Evanston, Illinois




## At the Road Show . . .

spaces inside prestressed members during casting, yet it can develop up to 11,000 vibrations per minute.

•

Newest model champion concrete saw is tabbed the CS 3600. Powered by a 36-hp gasoline engine, the machine features direct chain drive to eliminate slippage and maintain torque, a swivel front wheel for easy maneuverability, and a single unit mandrel for easy removal for maintenance purposes.

### Component Parts

Now in its second year of manufacturing planetary driving gear for heavy roadbuilding equipment, Timken Roller Bearing Co. displayed six new rigid axle drives, and six steering axles now going into a number of other machines displayed at the show.

The rigid or weight-axles, usually on the rear of a machine, are not particularly new, although planetary drives haven't been widely used until very recently, since they were standard equipment on the Model T Ford. The steering axle drives, developed particularly for the heavy, four-wheel drive, front-steering shovel-loaders, are new. Advantages claimed for the drive system include direct application of power at the wheel, rather than at a mid-axle differential, nearly foolproof change of drive ratios, elimination of considerable loss in worm and other gearing in conventional differential rigs. A further advantage is that, in case of trouble, the entire wheel, along with planetary drive mechanism, can be removed and replaced without dismantling the entire rear end of the machine.

•

Trending a little away from the general move to torque converters and from its own air-actuated controls, Fuller Manufacturing Co. has introduced its "Road Ranger"—a completely mechanical transmission for over-the-road trucks. The transmission has seven forward speeds, one reverse.

### Materials

Reflectorized paint—now well established for highway marking, signs and the like—now is available in a new liquid form that can be sprayed or painted on any surface and will retain its qualities for a year or more. Minnesota Mining and Manufacturing Co. "Codit" paint, now available from "3-M" dealers only, is packed both in Aerosol spray cans and regular paint containers for brush painting. Original development was aimed at making paint usable in hard to get at angle and joints, but the company sees much use for the product by contractors. Silver-gray paint will stick to almost any surface, could be used for quick safety job on pieces of equipment left in exposed places at night, on barricades, poles and curbings. It can be used for quick, temporary—but highly visible—detour and warning signs at many a construction location.

•

Something different in cold patch mixes is now being marketed by the Barrett Division, Allied Chemical Co.'s Trademarked "Rouderite," the base for the mix is an inverted asphalt emulsion that can be used alone for surface treatment of roads, or with aggregate for cold patching. Barrett experts say the mix will remain workable after stockpiling for months during the winter, but—when tamped or rolled—isn't tacky, surface-hardens quickly. Mix is sold by the carload by Barrett dealers. Emulsion is sold in barrels.

### Experimental and Futures

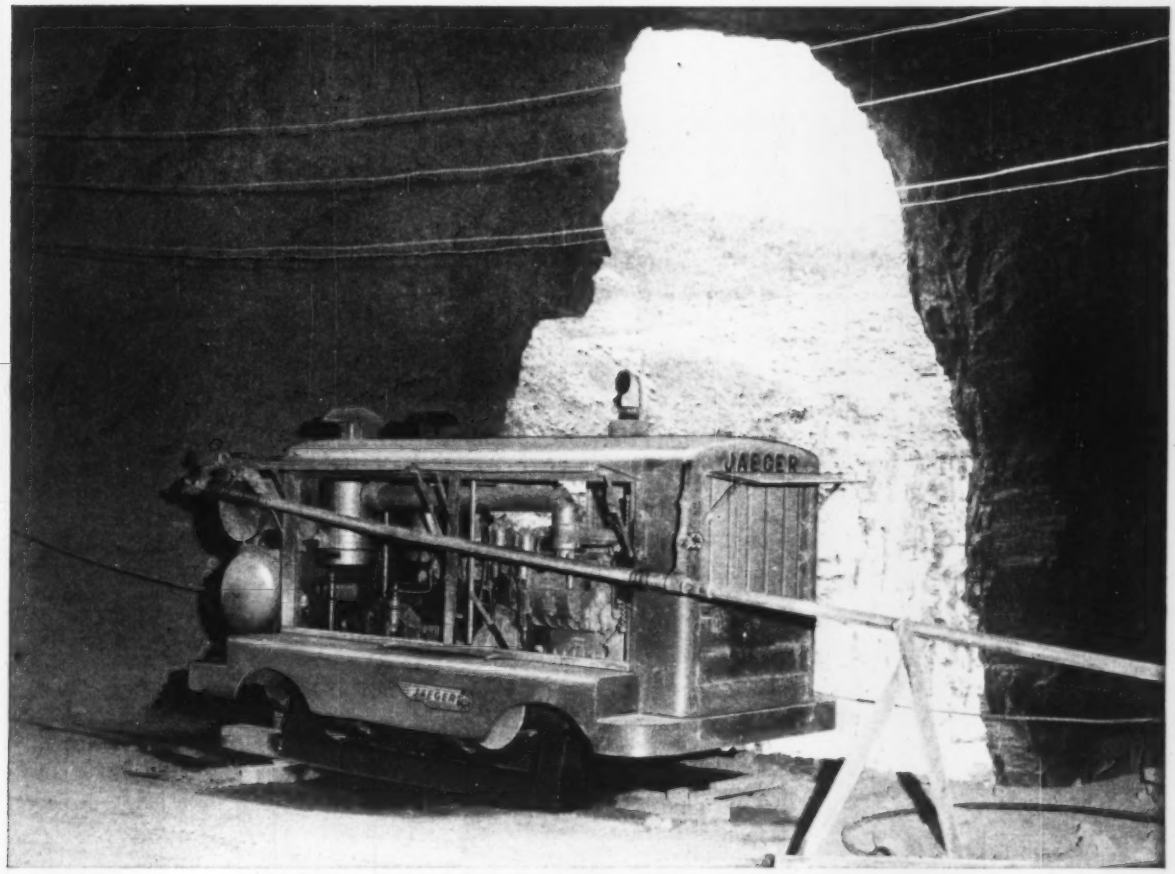
Source of a lot of talk at the show among crane and bucket manufacturers were reports that several firms now are experimenting with hydraulic controls for clamshell buckets.

Despite difficulties in mounting, engineers said that hydraulic controls would give more positive control of digging action of the buckets for accurate work, particularly under water, and would eliminate one big disadvantage of the clamshells in bulk materials handling: the fact that the clam now actually scrapes the material off the bottom of the barge or railroad car, but with hydraulics could actually scoop up its load. One engineer reported that experimenters even were considering hydraulic controls that could vary the angle of the bucket itself and control swing, for accurate placing.

•

So new that pilot models are still being tested, and production schedules have not yet been set, is Austin-Western's three-pad vibrating earth-compacting unit, designed as a rear-end attachment for AW's line of three-wheel rollers. Designed for compacting sub-base material as well as embankments, the combination of roller and hydraulically-controlled vibrator unit constitute what the manufacturer claims is "roller compaction of tomorrow".

(More new products items on page 74)




**400 HOLES OF 12′ - 18′ DEPTH, PER 8-HOUR SHIFT, IN HARD MISSOURI LIMESTONE, ON 36 GALLONS OF FUEL**

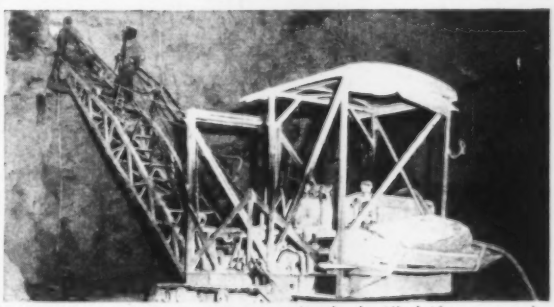
This is average day's work of this Jaeger "600" Rotary Compressor and two 4" drifters, in Federal Materials Company's underground quarry at Cape Girardeau, Missouri. A. W. Zimmer, Jr., Secretary-Treasurer and Manager, reports: "We are more than 100% satisfied with the performance of the Jaeger rotary compressor. Efficiency and fuel economy are remarkable and, except for regular filter changes, maintenance expense has been zero."

# Jaeger 600 Rotary ...*brings new efficiency to drilling*

A Jaeger "600" rotary produces the same 600 cfm of air as other "600" compressors, *using the same 6-71 GM diesel engine at 100 to 150 rpm slower speed (1650 rpm instead of 1750 or 1800).*

This explains why Federal Materials Company can keep two 4" drifters drilling 8 hours in hard rock on only 36 gallons of fuel. You use less fuel, subject your engine to less wear, and turn your compressor as many as 9000 fewer revolutions every hour you work.

Smaller Jaeger Roto Air Plus-8 units have the same low speed, high efficiency performance. It will pay you to get full details or demonstration from your Jaeger distributor —or let us mail you Catalog JCR-5.



CRAWLER AND BOOM MOUNTINGS for both 4" drifters was designed by Federal Materials Co. to fit their particular needs.

50th YEAR JAEGER

## THE JAEGER MACHINE COMPANY

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## Mounted Backhoe Has Greater Mobility

Shawnee Manufacturing Co. of Topeka, Kan., has announced availability of a truck-mounted digging unit.

The truck is a heavy-duty, 4-wheel drive standard model with a power take-off at the transmission for driving the hydraulic system of the backhoe.

Standard mounting on the truck frame is adaptable to either the Shawnee "Chief" or "Warrior" backhoes. The Chief digs approximately 15 ft deep and the Warrior about 12 ft. Both models are designed on the "push-pull" principle, with hydraulic cylinders that operate synchronously but in reverse directions on either side of the axis pin. And both operate in three 120° quadrants, which can be changed by the operator without leaving his position at the controls. SHAWNEE MFG. CO., 1947 NORTH TOPEKA AVE., TOPEKA, KAN.

## All-Purpose Loader

### Versatile lift truck works in boxcars and in buildings

A new pneumatic tire lift truck that has the compactness to work inside a single-door boxcar, yet has the traction and capacity to handle 7,000 lb loads over rough yard terrain, has been developed by Hyster Co.

With an unusual combination of long wheel base stability and exceptionally compact dimensions for close-quarter work, the Hyster 70 features maximum power for a trend toward the packaging of larger, more economically handled unit loads.

This lift truck has been designed to meet the needs of lumber and building supply dealers, concrete products manufacturing, stevedoring concerns and other businesses requiring a heavy-duty maneuverable truck.

It has a turning radius of 100 in. and a length of 106¾ in. Both measurements are the shortest in the 7,000-lb pneumatic range, according to the Hyster Co. The truck is equipped with pneumatic tires, which insure adequate flotation for operations carried out over rough terrain but, at the same time, allow the operator to work in inside storage locations.

All-weather dependability is provided by a heavy-duty Hercules gasoline engine. Large bore and stroke enables this 70-hp engine to develop a rated torque of 182 lb ft at 1,200 rpm, according to the manufacturer.

Hydraulic booster-type power steering is standard equipment on the new machine. In addition, its rugged one-piece frame and body provide maximum stability.

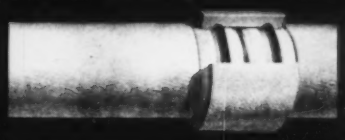
The new Hyster 70 can be equipped with any number of special attachments in addition to forks. Other features of the lift truck include conveniently operated controls with a direct reading dial for recording engine hours, high capacity cooling system incorporating a pusher type fan and a heavy-duty 12-in. dia clutch. HYSTER CO., 2902 N. E. CLACKAMAS ST., PORTLAND 8, ORE.

(*New Products continued on page 79*)

# NEW

## K&M Asbestos-Cement SEWER PIPE with "Fluid-Tite" Coupling

**THE EXCLUSIVE K & M "FLUID-TITE" COUPLING which eliminates infiltration at the joint.**



**TWO SIMPLE STEPS FOR PERMANENT, WATERTIGHT JOINTS.**

ONE . . . lubricate rubber rings.
TWO . . . Slide pipe in. That's all!

*It's made of mineral asbestos fibers and portland cement.* NON-CORRODING, NON-ELECTROLYTIC, STRONG, LIGHT IN WEIGHT, EXCEPTIONALLY SMOOTH BORE.

**These proven factors mean *3-way* savings to your community:**

**YOU SAVE IN PLANNING . . .** Flatter grades
Fewer lift stations
Higher-level filtration plants
Smaller pipe diameters

**YOU SAVE IN INSTALLATION . . .** No stopping for unfavorable weather or ground conditions
Fewer workers, quicker installation
Unskilled labor—no heavy machinery required
Economical transportation and handling
Permanent watertight joints—immediately, simply

**YOU SAVE IN OPERATION . . .** Infiltration eliminated through the joint
Roots can't enter
Bore remains smooth
Fewer inspections . . . fewer periodic cleanings

Write for complete information on K&M Asbestos-Cement Sewer Pipe.

K&M Asbestos

**KEASBEY & MATTISON**
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# LOOK! NEW FORD

The boldly modern styling you see in new Ford trucks for '57 only *hints* at how deep-down modern they really are!

These deep-down modern Fords bring you important new advances in power, more durable frames, stronger axles and springs, and completely new stronger cabs with structural design improvements.

'57 Ford trucks are so modern . . . *so new* you've just got to see what they can do. Get in touch with your Ford Dealer now.

## LOOK again!

## They're modern through and through

**NEW cabs**—completely new—stronger, roomier, smarter! New wider full-wrap windshield. New inboard cab step, new Hi-Dri ventilation, new easy-to-read instrument panel!

**NEW hydraulic clutch,** standard in all models from pickups to tandems. Easier to operate—works like hydraulic brakes. Clutch and brake pedals are suspended type for extra driving ease!

**NEW Styleside pickup bodies,** standard at no extra cost. America's biggest pickup bodies! Built wider with all-steel rugged box-section corner reinforcements and recessed taillights. Side loading's far easier with full-width body.

**NEW riding comfort!** A completely new suspension, big roomy cabs with increased visibility, greatly improved riding and handling ease.

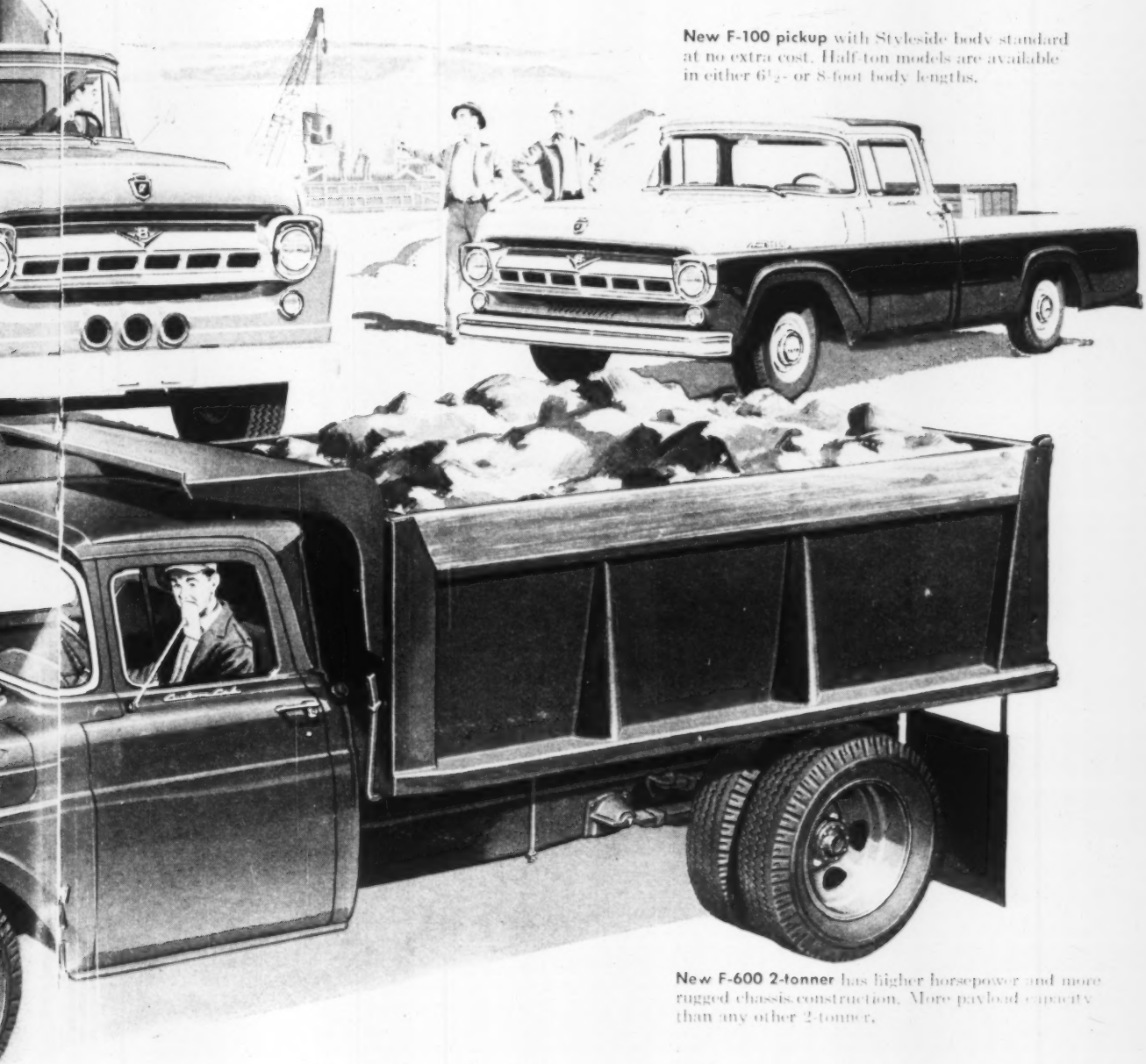
**NEW chassis and body strength!** New frames, up to 13% stronger. New sturdier axles! New higher capacity springs! New stronger, more durable cabs.

**NEW power advances!** New higher horsepower, new freer breathing, new higher compression, new Super-Filter air cleaner. New advancements from camshafts to carburetors! Modern Short Stroke design in every engine—V-8 or Six.

# D TRUCKS for '57

**New T-800 Tandem,** 45,000-lb. GVW. High torque 212-hp V-8 engine, 4-barrel carburetor and power steering, standard at no extra cost.

**New F-100 pickup** with Styleside body standard at no extra cost. Half-ton models are available in either 6½- or 8-foot body lengths.



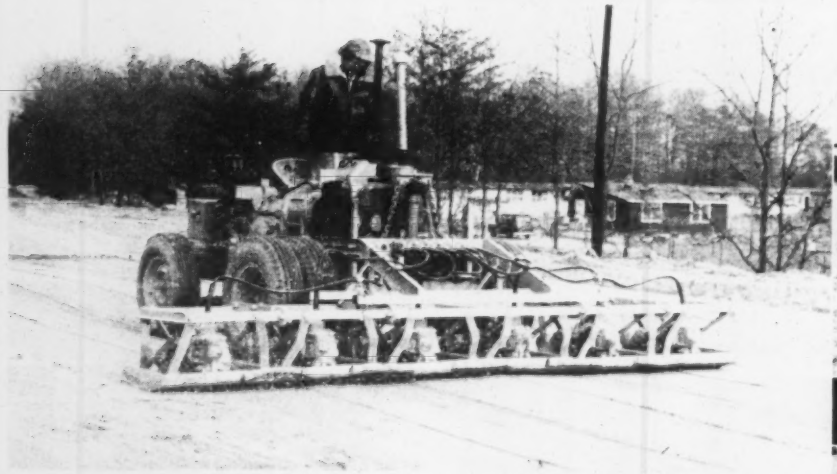
**New F-600 2-tonner** has higher horsepower and more rugged chassis construction. More payload capacity than any other 2-tonner.

*For '57 and the years ahead –*

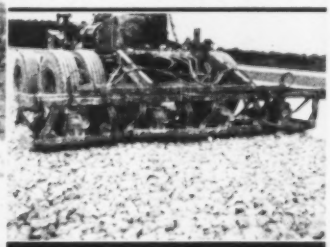
## FORD TRUCKS COST LESS

*. . . LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!*

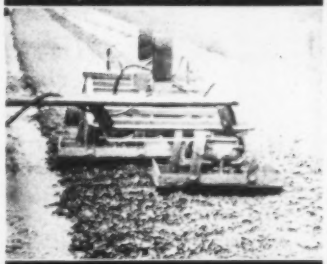
# BASE COURSE DENSIFICATION at its *QUICKEST* and *BEST*



**6 COMPACTING UNITS IN WORKHEAD** for maximum productivity in straight-away work. Left: Compacting sand fill in a bridge approach . . . another phase of its wide range utility to paving contractors.

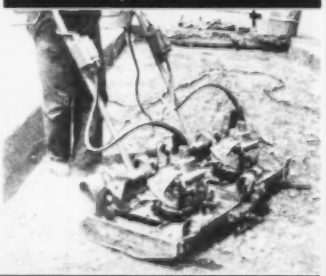


**4 COMPACTING UNITS** just fit this widening job-change required in only a few minutes.



**3 COMPACTING UNITS** in tandem and staggered, suits this job ideally — a quick and easy change.

**1 COMPACTING UNIT** fitted with operating handle and narrow base. Just right for the otherwise unreachable spots.



**2 COMPACTING UNITS** in twin hook-up — self-propelling. One man readily compacts up to 4000 sq. ft. per hr. in 10" layers.

## *Plus* UNMATCHED ON-THE-JOB *ADAPTABILITY!*

For consolidating granular soil sub-bases and the base courses of sand, gravel, rock or slag in waterbound and penetration macadam construction, there is just nothing that compares with the Jackson Vibratory Multiple Compactor. It not only does the straight-away work in only half the time required by equipment of other types, but is so versatile, so easily adaptable on the job that it can be used to great advantage for widening projects of any width and getting into places other equipment can not touch. As may be noted in the illustrations, any number of compacting units may be used in the workhead (up to 6, which covers 13', 3") to exactly fit the job at hand. Units may be towed at the side or fitted with operating handles and used as individual, self-propelling compactors. Quickly interchangeable bases from 12" to 26" are also available for compacting in trenches, etc.

For compacting granular soil fills of all kinds, the Jackson Multiple Compactor is a terrific cost saver and progress expediter. *It's the predominant medium of consolidation used on the outstanding paving jobs in the country today.* See your Jackson distributor for complete details. We will gladly furnish his name, and literature on request.

**JACKSON VIBRATORS, INC.** LUDINGTON MICHIGAN

## Pressure Tank Is Optional With Spray-Kit Compressor

The several components of a line of low-cost paint-spraying equipment now on the market are offered in four different combinations. The list of components includes a compressor, motor, pressure tank and two spray guns.

For small jobs, the recommended kit comprises a cup-type gun, compressor and air hoses. The gun is pressure-feed type. The kit is available either with or without a motor.

For spraying large quantities, the kit includes a pressure tank with the compressor. The gun for this combination can be adjusted for either pressure feed (for thick liquids) or suction feed (for thinner fluids). The motor is also optional with this model.

The motor and the heavy-gage pressed-steel compressor are mounted on a steel base with rubber-padded feet. Max. pressure: 40 psi. DeVilbiss Co., 300 Phillips Ave., Toledo 1, Ohio.

## Two Absorption Coolers Made For Small Buildings

Automatic absorption refrigerating machines now are produced in 60- and 80-ton sizes.

The machines are single-packaged, vertical units suitable for cooling small buildings. The operating range is full capacity to zero load. Carrier Corp., Syracuse 1, N. Y.

(New Products continued on page 80)


# house footings ...HERE?

***Right!* — *in spite of all the trees this Cleveland 110 is doing a fast job trenching for housing unit foundations***

A highly maneuverable trencher is an absolute requirement for economical production to the accuracy required for building foundation trenches in conditions like these experienced by Algernon-Blair, Inc. of Montgomery, Ala. on this 127-unit housing project at Fort Eustis, Va. for the Corps of Engineers.

Here's what J. B. Snipes, Project Manager for Algernon-Blair, says about his Clevelands: "We are using Clevelands exclusively on the Fort Eustis project because of their excellent performance and dependability. We chose Clevelands originally because we consider them faster—and their superior maneuverability is a feature we particularly like on a project like this."

***At the Road Show • Cleveland Trenchers and Backfillers • Exhibit 417***

**THE CLEVELAND TRENCHER CO.**

20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

Good Everywhere

*California contractor estimates:*

# Time and labor costs cut 75% with the Remington Stud Driver

Out on the California coast, "Research House for '56" is taking shape. It's an experimental house sponsored by Associated Architectural Publications and the latest tools are being used to build it—such as the Remington Stud Driver.

Contractor Bert Pickney says, "The Stud Driver cuts time and labor costs around 75% in anchoring beam supports, partition sills and furring to concrete. It took us only half a day to install the sills—a 2-day job with bolts. No pre-drilling and sills set tight! I certainly recommend the Stud Driver to any contractor!"

**YOU CAN SPEED ALL STUD FASTENINGS**—light, medium and heavy-duty—with the Remington Stud Driver. It sets *both* $\frac{1}{4}$" and $\frac{3}{8}$" diameter studs in steel or concrete—up to 6 studs a minute either size. The tool is cartridge-powered, portable, ready to work *anywhere*. Forty styles and lengths of Remington Studs to choose from. Get full details by mailing coupon.

**Remington**

DU PONT

**STUD DRIVER**

Industrial Sales Division Dept. ENR-2
Remington Arms Company, Inc.
Bridgeport 2, Conn.

Please send me your free booklet which shows how I can speed the job and save with the Stud Driver.

*Name*_____ *Position*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____


. . . New Products

## Microfilm System

### 105-mm process devised for engineering plans, tracings

A new 105-mm microfilming system has been devised that successfully duplicates engineering and architectural drawings as large as 36 x 54 in. in sheet size and even larger for roll lengths.

One advantage of the new system is that second originals by this method, called Micro-Master, have been consistently better than the originals. A 75% improvement on the average, without art work, has been demonstrated in restoration of soiled or worn tracings.

The new process was developed by Micro-Master, Inc., Kansas City, Mo., in association with Keuffel & Esser Co., Hoboken, N. J.

Equipment to provide a nationwide reproduction service now is being installed in key industrial centers throughout the United States and Canada.

When tracings are to be reproduced, they are first mounted on a vacuum easel and photographed to pick up maximum detail in every instance, even in the case of material that is soiled.

Normally, soiled copy requires the photographer to adjust his exposure to burn out the background, and this, in turn, also burns out the weak lines.

In Micro-Master, however, the weakest line image is captured without respect to background dirt. Soil and mottle then are clipped out of the projected image, with exposures precisely timed to the nearest tenth of a second.

Although the new 105-mm Micro-Master System for reproducing large architectural and engineering drawings is just being introduced as a nationwide service, large numbers of negatives—perhaps more than 500,000 of them—already have been made during exhaustive field testing of the new process.

The largest user to date, the U.S. Army Corps of Engineers, has received more than 50,000 negatives from Micro-Master laboratories and is continuing with an extensive program to commit more of its huge tracing files to film.

After testing the reproduction quality of 105-mm film, the Corps has begun the planned destruction of many of its original tracings, some of them on cloth. At least 14,000 drawings have been destroyed after filming.

The Nebraska Highway Department already has decided to standardize on Micro-Master for all of its new drawings, and is ordering 105-mm negatives made each time 100 tracings have accumulated.

Micro-Master negatives also have been made for the New Jersey Turnpike Au-

Two men died instantly here. White car in top circle traveled path of dotted line, jumping the center island, and crashed head-on into dark car in lower circle at spot marked with "X."
PHOTO COURTESY DETROIT NEWS

# Detroit and Wayne County Act to Prevent Island-Jumping Expressway Crashes with **Armco Guardrail**

Armco FLEX-BEAM is being installed in center island of the Lodge Expressway, just days after the fatal accident pictured above. Guardrail should prevent similar tragedies.
PHOTO COURTESY DETROIT TIMES

Last fall, two men were driving their cars to work in opposite directions on the six-lane John C. Lodge Expressway in Detroit. Suddenly, one car went out of control, jumped the island separating the traffic lanes and crashed head-on into the other car. Both men were killed.

Local and state officials decided to install center-strip guardrail immediately to prevent similar accidents. Public sentiment backed them up. Following the taking of bids an initial order for 13,250' was placed with Armco a few days after the accident. By 5 P.M. that same day, the first truck load was on its way. One week later, some 3,000 feet of Armco Guardrail had been installed.

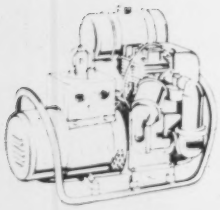
**Guardrail Solved Similar Problem**

In discussing the merits of guardrail, a local police official said, "In the three years preceding installation of guardrail on the Davison Expressway (Detroit), there were 16 fatalities. Thirteen might have been prevented by a guardrail.

"There have been no fatal accidents on the Davison Expressway caused by cars jumping the center island since the guardrail (Armco FLEX-BEAM®) was installed in October, 1952."

FLEX-BEAM Guardrail is one of many Armco drainage and construction products used on highways all over the free world. Write us for complete information. Armco Drainage & Metal Products, Inc., 3557 Curtis St., Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO



**For all off-highline jobs...**

## F-M portable power generators

Thousands of contractors use Fairbanks-Morse portable or mobile power generators to operate power tools of many kinds, job floodlights, crew quarter lights, field offices, etc.

F-M generators are available in portable sizes from 600 to 2500 watts, and in mobile units from 3 kw. to 10 kw. For long-term jobs, permanent units to 100 kw. are available. AC current. For complete details of capacities, fuels, cooling systems, etc., write Fairbanks, Morse & Co., Dept. ENR-27, Chicago 5, Ill.

**FAIRBANKS-MORSE**
*a name worth remembering when you want the BEST*

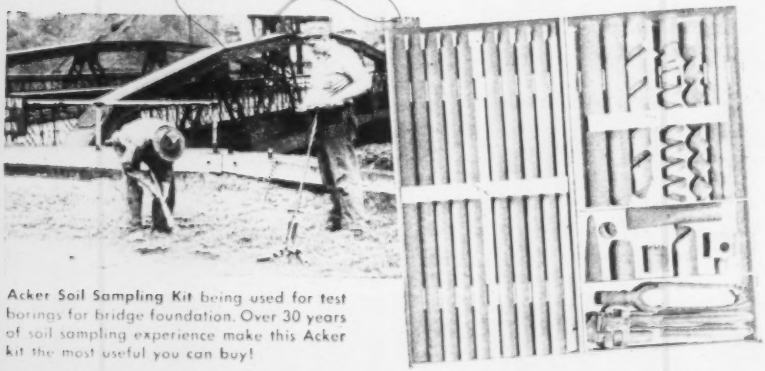
GENERATING SETS • WATER SYSTEMS • MOWERS • MAGNETOS • PUMPS • MOTORS • SCALES • DIESEL LOCOMOTIVES AND ENGINES

# DON'T GUESS!

**use an ACKER SOIL SAMPLING KIT for accurate sub-surface information**

With accurate sub-soil information, you avoid costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car.

Write today for prices and Bulletin 26.



Acker Soil Sampling Kit being used for test borings for bridge foundation. Over 30 years of soil sampling experience make this Acker kit the most useful you can buy!

**ACKER DRILL CO., Inc.** 725 W. Lackawanna Avenue Scranton, Penna.

*a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment*




thority and for a number of municipalities for such purposes as city planning and engineering.

Full-sized second originals may be produced on photographic paper, cloth, or film. MICRO-MASTER, INC., KANSAS CITY, MO.

### Front-End Loaders Feature Extra-Strong Tubular Frame

A new line of tractor-mounted front-end loaders feature an extra-strong tubular frame, part of which acts as a hydraulic oil reservoir.

Bucket arms are mounted so that they cannot "spring" and hydraulic piping is enclosed in loader arms for protection.

The loaders, said to have an especially strong "pry-out" action for heavy or frozen loads, can be mounted on most models of low-silhouette, four-wheel industrial tractors. SUPERIOR EQUIPMENT DIV., P. O. BOX 341, WHEELING, ILL.

### Portable Powered Backhoe Eliminates Hand-Digging

A low-cost, portable, powered backhoe has been designed to eliminate hand digging.

The new machine—the "Ditch-Witch"—is capable of digging to a depth of five feet for trenches, bell holes and excavations. A trailer unit weighing 500 lb. has its own gasoline power unit and hydraulic system.

It is especially well suited for digging where gravel and loose rock are prevalent, according to the manufacturer. THE CHARLES MACHINE WORKS, INC., PERRY, OKLA.

### New Lightweight Tarpaulins Are Made of Nylon-Plastic

Plastic tarpaulins weighing less than 0.1 lb per sq ft now are available under the trade name Rhinolyte from Marsgood Plastics Corp. The material consists of nylon mesh laminated between two sheets of vinyl plastic. Strips of the fabric are joined with waterproof seams into large sections to make the tarps.

Field tests are said to have shown that Rhinolyte is unaffected by salt-water and most acids and chemicals, will not burn, resists tearing and abrasion, and remains flexible down to a temperature of —50 deg.

The light weight of the fabric (37 lb for a 20 by 20-ft section) is aimed at reducing handling problems usually encountered by industries using large heavy duty tarpaulins. MARSGOOD PLASTICS CORP., 24 VAN HOUTEN ST., PATERSON 1, N. J.

Whether it's a Compensation case or a Group case

# give him the benefit of 43 years of claim service experience

Have you ever considered the advantages of having your firm's Workmen's Compensation *and* Group Insurance written by the same insurance company?

Both you and your employees stand to benefit through this "two-way coverage" by Hartford. For it virtually insures more inclusive protection . . . efficient service . . . prompt payment of claims.

In 1913 the Hartford Accident and Indemnity Company began building its country-wide network of claim service offices which now total over 200.

All the wealth of knowledge our company and our staffs have gained in *43 years of handling Workmen's Compensation* is available to you on Group Insurance coverages as well.

And Hartford's "two-way coverage" combination is particularly valuable when cases come up that are hard to fit into a definite Workmen's Comp or Group category—*borderline cases.*

When you have combination coverage with the Hartford, settlement of claims is smooth and uncomplicated.

You should certainly look into Hartford "two-way coverage" for your Compensation and Group Insurance needs. See your Hartford Accident and Indemnity Agent or your insurance broker.

*Year in and year out you'll do well with the*

**Hartford Fire Insurance Company**

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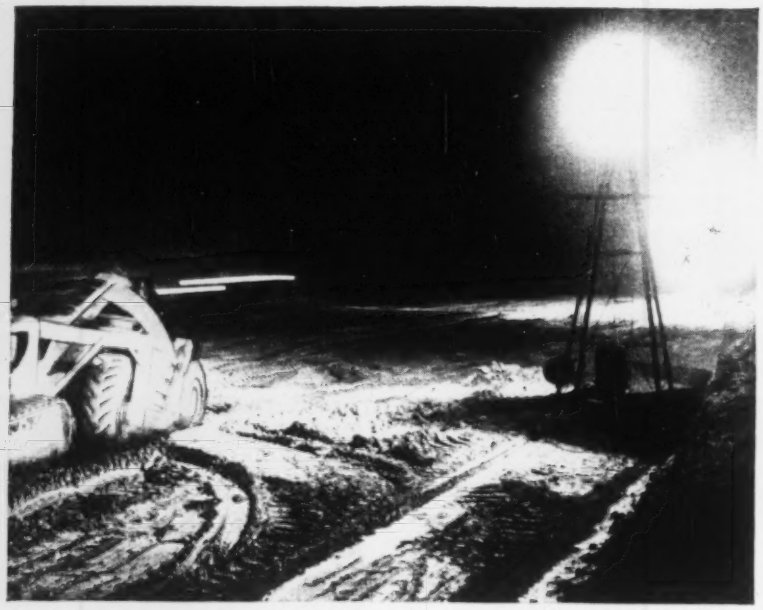
*Hartford, Connecticut*
New York Underwriters Insurance Company
*New York, New York*
Northwestern Fire & Marine Insurance Company
Twin City Fire Insurance Company
*Minneapolis, Minnesota*



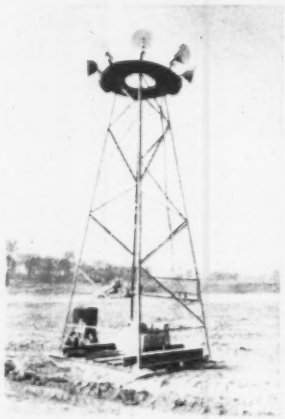
# ACRES OF DAYLIGHT

## for the night shift with ONAN power

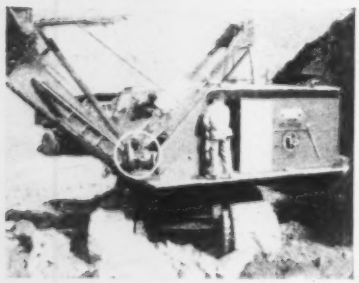
For night lighting on big projects an electric plant should combine high capacity with mobility . . . *high capacity* to handle a bank of powerful floodlights . . . and *mobility* to simplify frequent moving on the job site.

The Onan 10CW electric plant meets both requirements. It delivers 10,000 watts A.C., yet it weighs only 800 pounds. It is completely Onan-built, with a heavy-duty Onan 2-cylinder, gasoline engine direct-connected to an Onan all-climate generator in a permanently-aligned, compact, long-life unit. Starts instantly in any weather. Air-cooling eliminates trouble from freezing or leaking coolants. Available also as a 7,500-watt unit.

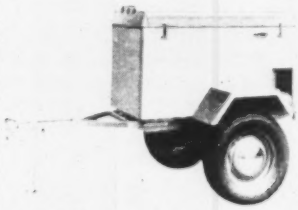
Put these mobile, high-capacity units to work on your next lighting job.



Onan 10CW mounted on a portable, skid-mounted floodlight tower. This unit is being used for night operations on a St. Lawrence Seaway project.



Onan 3KW Series 3DSP Diesel electric plant mounted on shovel—lights cab and work area.



Trailer-mounted 10CW. Tow it anywhere behind car or truck. Weatherproof housing.

**500 to 75,000 watts**

Lightweight, portable, gasoline-powered plants: 500 to 10,000 watts. Water-cooled plants: 10,000 to 75,000 watts. Air-cooled Diesel Plants: 3,000 and 5,000 watts.

**See your Onan distributor or write for specifications**

Onan ELECTRIC PLANTS

**D. W. ONAN & SONS INC.**

3039 University Ave. S.E., Minneapolis 14, Minnesota


# Obituaries

**Luzerne S. Cowles,** 80, former structural and appraisal engineer with Stone & Webster Engineering Corp., Boston, died Dec. 3 at Newton, Mass. He was a cofounder of the Engineers Club of Boston and served as first secretary. Earlier in his career, he was associated with the Boston Bridge Works and the Boston Elevated Railway.

**Edwin H. Denby,** 84, a New York architect for more than half a century, died in New York Jan 17. Born in Philadelphia, he attended the Polytechnikum in Dresden, Germany, from 1890 to 1892 and received a diploma from the Ecole des Beaux Arts in Paris in 1897. Denby opened an architect's office in Manhattan in 1900 and was in practice until the time of his death. He was architect for the Children's Museum, Brooklyn, and many other projects along the East Coast.

**Albert E. Hart,** 67, superintendent of public works at Lawrence, N. Y., and also building inspector, assessor and clerk of the village since 1940, died Jan. 17. A graduate of Cornell, he was at one time associated with his father in the contracting firm of Charles E. Hart & Son, Staten Island, N. Y.

**John Russell Montague,** 65, director of engineering for the Ontario Hydro-Electric Power Commission for the last eight years, died in Toronto Jan. 19. A 1914 graduate of the University of Toronto, he joined Ontario Hydro in 1918 as design engineer. During his 38 years with the commission, Montague was responsible for design of most of the hydro plants in Ontario, including those at Niagara Falls.

**Harold J. Rooney,** 52, who headed the Hartford office of the New York City consulting engineering firm of Howard, Needles, Tammen & Bergendoff, died Jan. 13 at Hartford, Conn. Rooney, a graduate of Rensselaer Polytechnic Institute, also had served as a civil engineer for the State of New York, and as a consulting engineer on the Massachusetts Turnpike.

**Arthur H. Wedge,** 53, superintendent-engineer for Weikel Construction Co., Fort Wayne, died Jan. 10. He was former city engineer at Wooster, Ohio, and city manager of Bedford, Ohio. A post engineer at Baer Field, Fort Wayne, while a lieutenant colonel in the U. S. Army, he later became airport manager for Smith Airport and Baer Field. He had been with the construction company for the last 10 years.

# ANOTHER MACOMBER FIRST PRODUCES AN ALL COLD FORMED STRUCTURE THAT IS STRONGER,

FOR THE FIRST TIME IN THE HISTORY OF STEEL CONSTRUCTION — Macomber has made available cold formed framing members for every part of a structural frame.

These completely standardized framing members are ALL-INCLUSIVE. They represent advanced, improved engineering design to provide greater rigidity in a structural frame with members which are lighter and cost less.

If your organization designs or builds any type of commercial, institutional or recreational type of structures, the undisputed economy of the bowstring truss now places a new value on this Macomber achievement.

You will want the new V-BOWSTRING TRUSS CATALOG as close as your desk drawer to check loads and spans and a quotation through your nearest Macomber Representative.

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   FOR SPANS 40 TO 76 FEET
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   FOR SPANS 7 TO 48 FEET
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   FOR ANY COLUMN SPACING
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   FOR SPANS 20 TO 60 FEET
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   FOR CLEAR HEIGHTS TO OVER 20 FEET

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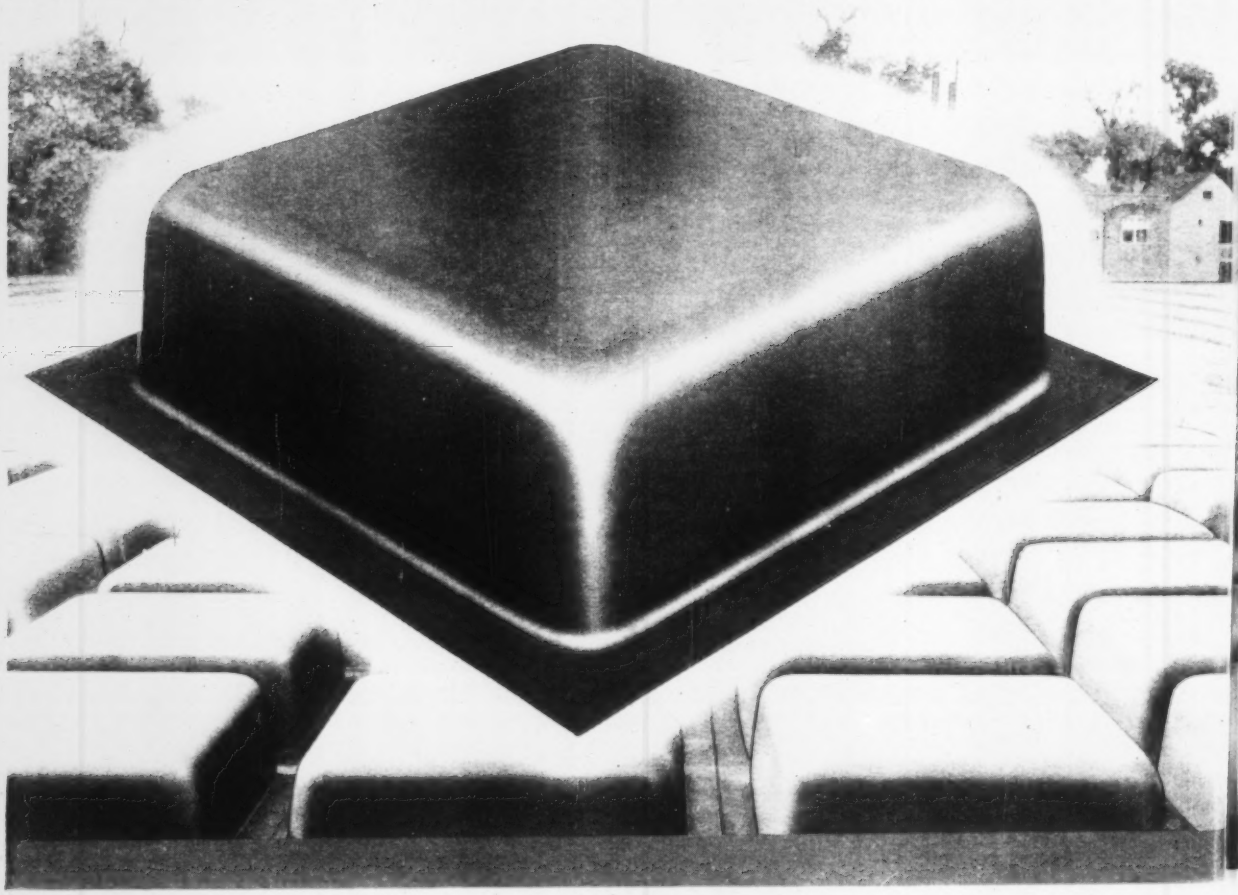
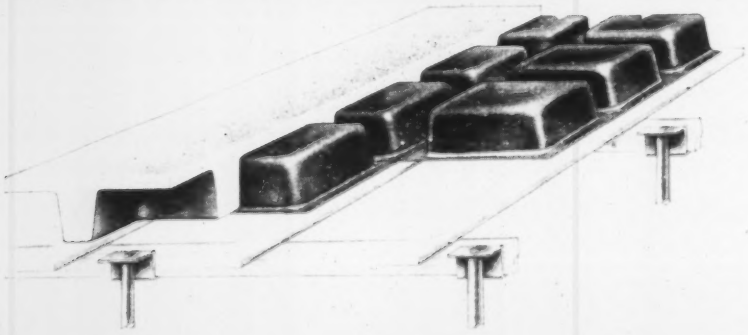
STEEL JOISTS

# WIDE OPEN *SPACES...*





Showing how Steeldomes are used in forming a attledge (two-way) concrete joist construction. Steeldomes are rigid, deep-drawn, one-piece units. Flanges forming standard-width joist ribs are an integral part of the Steeldomes. When erected, Steeldomes are butted at all solid joints, and eliminate the common defects of forms which must be lapped. Wide column spacings for open floor areas are easily achieved, because of: (a) the basic economy of two-way construction and (b) the saving of dead load through use of a joist framing system. Story heights are decreased by the elimination of deep beams. Standard Steeldomes have a void of 30" x 30" and an overall plan size of 36" x 36" including flanges. Standard depths are 8", 10", 12", and 14".

# *WITH ECONOMY...FOR TODAY'S CONSTRUCTION*

**...ALL MADE POSSIBLE WITH THE NEW CECO-MEYER ONE-PIECE STEELDOME METHOD OF FORMING WAFFLE-TYPE CONCRETE JOIST FLOOR SYSTEMS**

Maximum use of floor space is a must in today's functional buildings. And the most practical way to design wide open floor areas . . . with no projecting beams . . . is by using waffle-type concrete joist construction formed with Ceco-Meyer one-piece Steeldomes. The new Ceco method is the most economical way of forming waffle-type concrete joist construction. In most cases you save up to 30% in materials . . . up to 40% in floor weight compared with the use of flat plate. Besides saving money, labor and materials, Ceco Steeldomes form smooth concrete surfaces for exposed ceilings of high quality finish—pleasing waffle-pattern design at no extra cost. R C duct underfloor electrification may be readily installed—and pipes, ducts and other mechanical equipment can be located without interference of projecting beams. In planning your next building project, call in your Ceco product specialists.

**CECO STEEL PRODUCTS CORPORATION**

Offices, warehouses and fabrication plants in principal cities
General Offices: 5601 West 26th Street, Chicago 50, Illinois

IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

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CECO STEEL

"CREATIVE ENGINEERING" BY CECO—with a variety of building methods and products to meet any design problem. See CECO in the early planning stage for Steel or Concrete Joist Floor Systems—the most economical underfloor electrification—the widest line of Steel and Aluminum Windows and Curtainwalls. All will help you achieve individuality in building design. And at CECO construction materials and services cost the lowest budget.

**CECO STEEL PRODUCTS CORPORATION**
5601 West 26th Street, Chicago 50, Illinois

Please send me your descriptive bulletin on Ceco Steeldomes, No. 4006.

Name _____

Address _____

City _____ State _____

ENR

# "They're making 20% more trips a day than our other trucks working the Lincoln Tunnel job"

**HUSTLING 6½ YARD LOADS (60,000-LB. GROSS) FOR THIS NEW NEW YORK-TO-NEW JERSEY LINK,** Hudson Builders' new GMC W670 tandems have amazed their owner. "On hills where other trucks just manage to crawl, these GMC's *really roll,*" owner Harry Harris reports. "Our 70-truck fleet was formerly standardized on another make. But the GMC's top all the others – by plenty. You can be sure we're going to get more of them. And soon, too!"

**AS QUICK AND RESPONSIVE IN OFF-THE-ROAD WORK** as they are over the highways, these GMC's save time at every delivery. Big 225 H.P. engine gives them power to breeze through tough going. Safety Power Steering* makes at the job maneuvering faster and easier—lets you ease right up to the edge of excavations and foundations. And the W670 is only one of the new GMC construction haulers engineered for any job up to 59,000 GVW-90,000 GCW.

*Optional at extra cost

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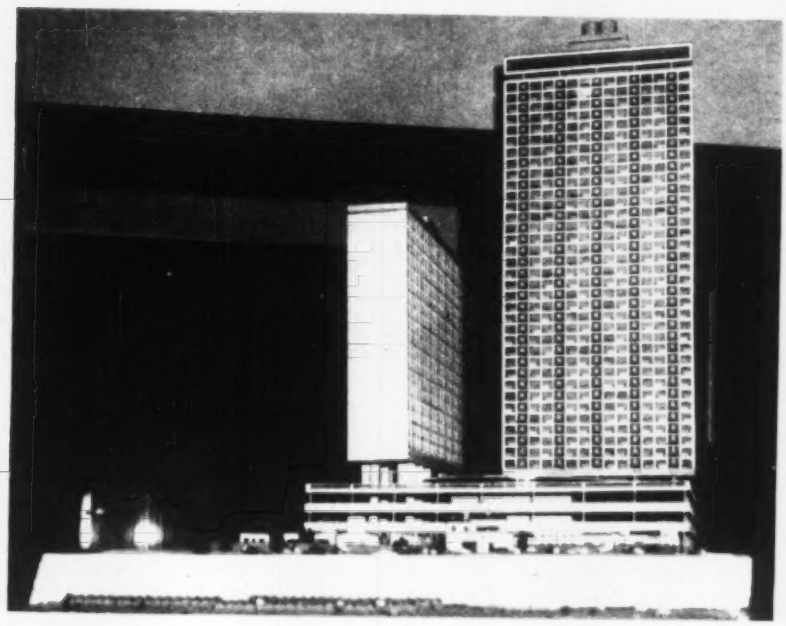

## Concrete Co-op Will Rise 40 Stories

Builders in the Argentine seaside resort of Miramar are working on an $11.1-million structure described by its architects as one of the world's biggest reinforced concrete buildings. Forty stories high in one section, it will contain 775,000 sq ft of commercial and apartment floor area.

Actually more like three buildings than one, the project ("Neptuno") will comprise three structurally separate sections—a four-story base block and two apartment towers. The towers will be raised on concrete stilts above the roof of the base block, and the stilts will extend down through the base block to separate footings.

The four lower floors will occupy the entire 81,000-sq-ft site. The apartment towers, however, with plan dimensions of 49x164 ft and 49x231 ft, will take up less than a quarter of the available area. They will rise 36 and 18 stories, respectively, above the top of the stilts.

The taller of the towers will attain a height of 470 ft above grade. Higher by 37 ft and still the tallest concrete building ever built is the 34-story Banco do Estatdo de Sao Paulo, Brazil (ENR Sep. 2, 1948, p. 72).

The street floor of the building will be tenanted by shops and businesses, including a 1,000-seat movie house. Parking space for 700 cars will take up the second and third floors, and the fourth floor will be a children's playground. About one-third of the play area will be enclosed in a penthouse. The remainder will be open.

The stilt-support method used at the tower bases will be used a second time in the higher apartment tower. The top story, to be occupied by a night club, will be isolated on stilts.

Other noise reduction features in the building will include solid masonry partitions between apartments and acoustically treated corridor ceilings. Also, plumbing lines and elevators will be floated on cushioning materials to minimize the sound transmitted to building elements.

Financed by Compania Inmobiliaria Financiera Rascacielo, S. A., the building will contain 1,150 apartments, to be owned cooperatively by the occupants. Prices will begin at $7,500 for a completely furnished apartment with one room plus kitchen and bath. Other apartments will contain up to three rooms and two baths.

Water supply for the building will be stored in four rooftop tanks, each with a capacity of 33,000 gal.

Construction began in December and is expected to take from 36 to 42 months.

The architects of the Neptuno project are Jorge Martinez Frontera, Mario Mihman Baron, Nicanor Zapiola Guerrico and Federico Ramos Mejia. The engineers are Carlos Ferrile, structural; Sergio Karakachoff, foundations, and Federico Malvarez, acoustics.

## Trials of a Newsman

*Some stories don't come as easily as the one at left, according to ENR's Buenos Aires correspondent. Here he tells how he went after a story on a concrete building and ran into a brick wall.*

It was a peaceful spring day in Buenos Aires last November, reports ENR correspondent Sep Strobl, when he received a routine assignment from New York. ENR wanted a story on the Atlas Building, a 42-story reinforced concrete skyscraper that the Argentine government was planning.

"I calmly noted it on my work sheet," Strobl writes from the Argentine capital. "Had I but known . . .

"On Nov. 7 I made my first telephone call on the story—to Captain Rivera, public relations chief for the Air Ministry. That department became involved after the 1955 revolution, when the proposed building, a former pet project of Peron, was given to the Air Force to house officers.

"After 10 days of unremitting effort I get him on the phone. He gave me his blessing and assigned an aide to see that I got the necessary authorization from the Direccion de Infraestructura, the ministry's quartermaster department.

"One week later I went to my first appointment. I got the full treatment—coffee, cigarettes, introductions to department heads, and lots of conversation.

"After an hour I got a little restless. But it seemed the letter of authorization still had to be written. Besides, these men were doubtless all good contacts for the future. After two hours I muttered something about another appointment. This moved my hosts and 30 minutes later I received a letter authorizing me to collect for publication *all* information about the Atlas Building. It was signed by the Quartermaster Director General himself. It was beautiful.

"For the next three days I worked with GEOPE, the builders. I got all the material—plans, blueprints and statistics. That wrapped up the story.

"But then it appeared that all the material had to go back to the Air Ministry for approval. Approval of what? Were the figures on the amount of reinforced concrete perhaps inaccurate? Are the number of square meters of floor space a military secret? Is the height of the building a matter for debate? Mine not to reason why. But I reasoned why anyway. I mentioned

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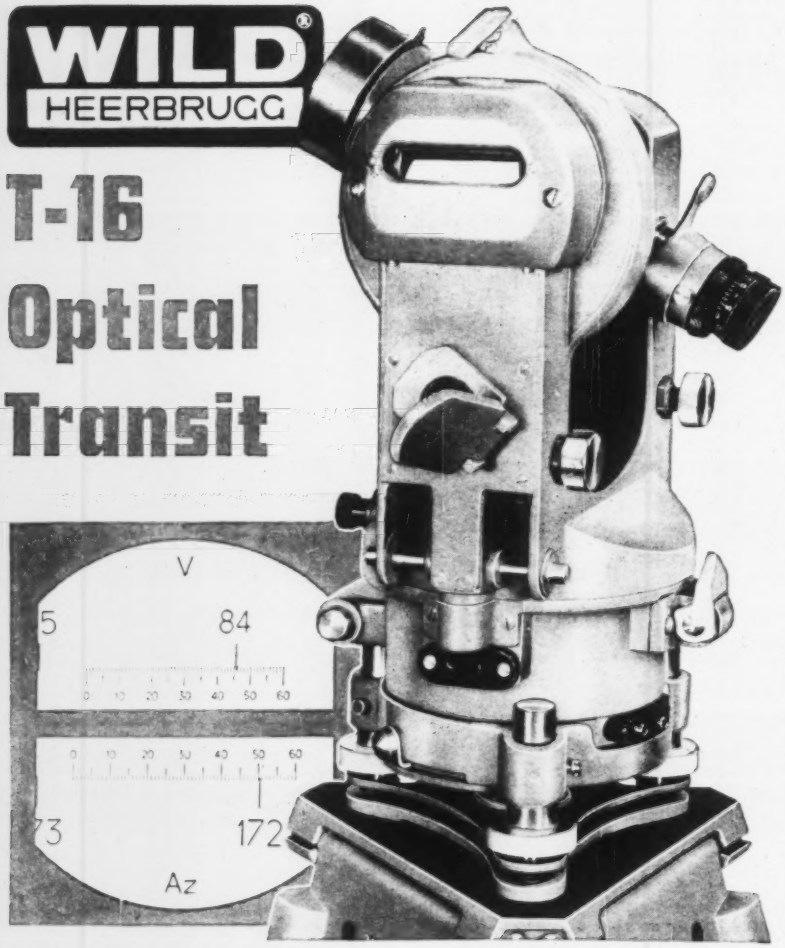


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"I was assured that I would have the material back approved the next day, then the next after next, and so on. December came. And still nothing happened—unless you count my 17 telephone calls to the Air Ministry.

"Suddenly I couldn't speak to anyone, no Captain Rivera, no quartermaster. Occasionally, as I became more and more urgent, I won through to the adjutant's office, where I was assured that the matter was being given careful thought somewhere in the ministry.

"The deadline was Dec. 7. That passed.

"By Christmas I had an incipient stomach ulcer, and the whole staff of the Air Ministry appeared to have taken leave for the rest of the year.

"A small clerk from GEOPE finally explained the delay. When he handed the material over to the ministry, several officials began to study it. They muttered over it. The engineer distinctly heard the word 'espionage.'

"Now that suspicion has been aroused, this is what I want to know: What is the penalty for ascertaining the number of bags of cement that will go into that skyscraper? What will they do to me for having looked at the floor plans? When I get shipped off to Ushuaia, will they also send the Reuter's man who was the only newsman to get preliminary data on the building in 1955? (Peron was angry with American correspondents then.)

"These are the questions I am asking myself now, but only to avoid having to consider the number of man-hours that I have spent gathering interesting but perfectly innocuous facts only to have some officer sit on the story.

"This sort of thing happens all the time here. Only most of the time it isn't espionage, just a customary foul up."

## Canada's First Tollroad Will Get a Spring Start

The government of Quebec will introduce a bill during the current legislative session to set up a tollroad authority for building and operating the proposed six-lane Montreal-to-St. Jerome Expressway.

The multi-million-dollar expressway, which will run 30 miles from Montreal to the Laurentian Mountain resort area, is scheduled to get a spring construction start. It will be the first project of its kind in Canada and is expected to do much in the way of solving Montreal's traffic problem.

(*International continued on p. 92*)

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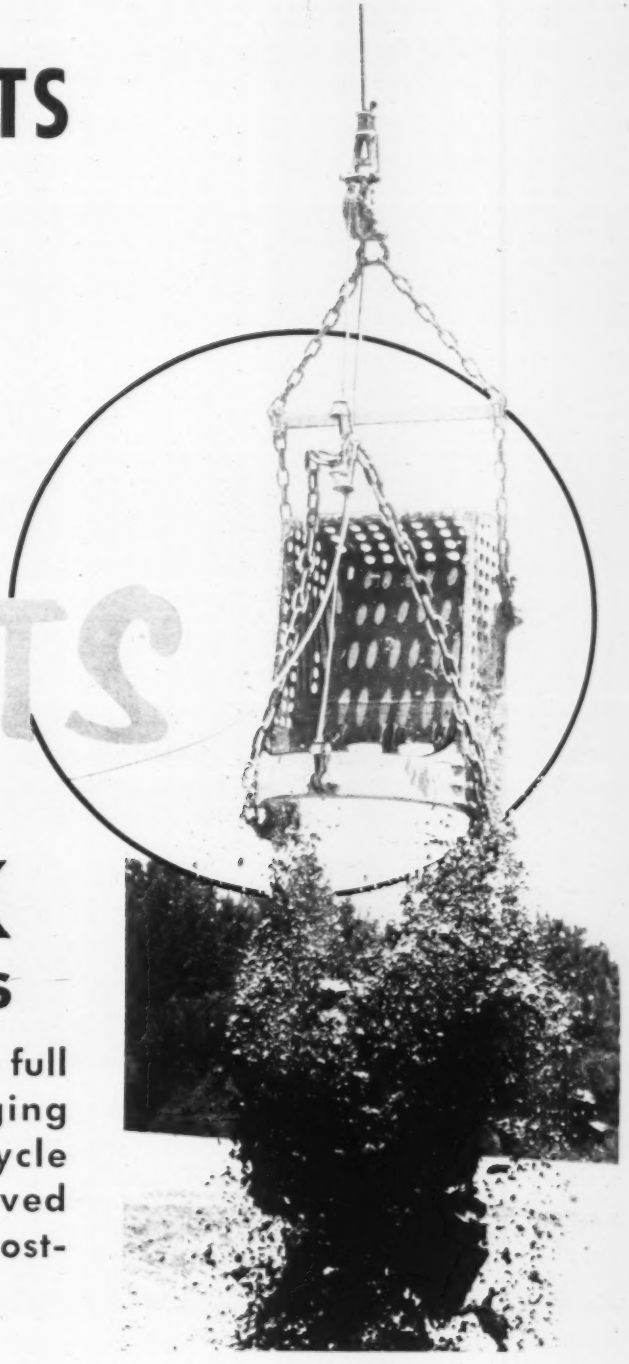

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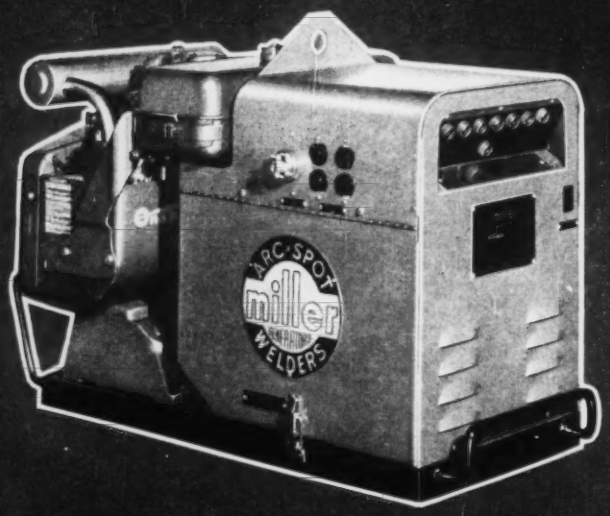


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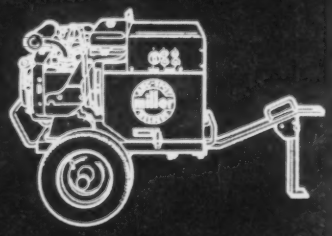

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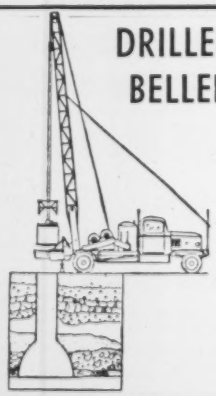

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# Road Spending Up

## World Expenditures Reach $12.9 Billion During 1956

Highway expenditures throughout the free world reached an estimated $12.9 billion during 1956, the International Road Federation reported last week. Federation officials said that the total is more than $2 billion higher than 1955 and marks the ninth consecutive year that a new record has been set in highway construction.

Excluding work in the U.S., highway expenditures totaled an estimated $5 billion, an increase of 35% over 1955. U.S. expenditures for all highway purposes at all levels of government were set at $7.9 billion, $725 million greater than in 1955.

Canada spent $725 million in 1956, up from $600 million in 1955, and was second to the U. S. in world highway construction.

West Germany with a total expenditure of $570 million for highways was just behind Canada.

In a geographic breakdown of the spending, IRF said that European countries spent $2.3 billion on highways, up 43% from 1955; Latin American countries spent $622 million, up 77% over 1955; Asian countries spent $736 million; Australasia, $287 million, and Africa, about $266 million.

• **New financing methods**—Significant during the year, said IRF, was the trend toward development of new patterns of highway financing on projects that lend themselves to innovations or modifications of ordinary methods.

Cuba, for instance, developed several projects such as the Havana Tunnel, which could be undertaken by private syndicates in return for concessions or other rights connected with the completed projects. The syndicates are given the authority to issue bonds against the collection of tolls for payment. In return, the government gets a very costly project quickly and free of any demand on the national budget.

In another instance, the Tokyo metropolitan government is receiving an elevated expressway running nearly a mile through the city's most congested section at no cost and toll free. In return for its investment, a private company is given the right-of-way over an abandoned canal and the privilege of collecting the rent of two-story buildings that it is constructing under the expressway.

In Costa Rica, French financial interests have offered the nation a credit of $30 million, the major share of which

Preparing roads and building sites at Myrtle Beach Air Force Base, D Tournapull makes selective cuts and fills to grade roadway. Contractor estimates production at 7.1 cu. yds. per load, average 700 pay-yards per day.

## *5 contracts at Myrtle Beach Air Force Base*

# prove versatility of dirtmover

The real pay-off on a smaller-sized, self-propelled scraper is *versatility*. A. D. Plowden, Jr., of Sumter, S. C. has proved to his own satisfaction that yard-for-yard and dollar-for-dollar, you can't beat D Tournapulls for profitable "handyman" dirtmoving on moderate-sized jobs.

Contractor Plowden worked 7½ cu. yd. "D's" at Myrtle Beach Air Force Base, Myrtle Beach, S. C. This 4470-acre, World War II bombing and gunnery training base was converted by Corps of Engineers, U.S. Army, into an operational base for Tactical Air Command, 9th Air Force.

### "D's" do many kinds of work

Since he started on the project Mr. Plowden has completed a wide variety of jobs on his subcontract. His D Tournapulls have hauled yardage for runway extensions, built dikes around oil-storage tanks, cut two 1300'-long ditches, hauled muck, and handled many other dirtmoving jobs.

### 50,000 yard site-development

Working for Industrial Construction Corp., Hampton, Va., Plowden prepared building sites and constructed roads. To handle this work, contractor brought in 2 D Tournapulls, a crawler-pusher, and a motor grader. The "D's" moved and spread topsoil, removed unsuitable material, hauled-in stable material, and prepared roadbeds and a railbed on the base.

When photo was taken, one "D" was cutting roads in an oil-tank area. Work was on a selective cut-and-fill basis. Tournapull took light cuts with the aid of the pusher . . . hauled fill to a low section of road, on cycles up to 1800' long. Plowden estimates that "D" heaps 7.1 cu. yds. of the sandy topsoil . . . hauls as much as 700 pay-yards per day on moderately short hauls over average terrain.

### Contractor buys another D Tournapull

Mr. Plowden watched "D's" production closely, because he needed another self-propelled scraper to handle his expanding business. Two other scrapers were studied on demonstration, working side-by-side with his D Tournapull. One was a 7.0-9.0 cu. yd. unit powered by 143 hp engine; the other scraper demonstrated was a 172 hp, 10.0-14.0 yard machine.

After careful consideration of all factors, Plowden returned both demonstrators and bought another D Tournapull. His conclusion is that the "D" heaps as much dirt as the 7.0-9.0 yd. machine . . . turns faster, covers more ground, carries less deadweight . . . has more power per pound loaded and empty, and costs less.

### Works well in poor footing, on hills

Plowden is pleased with D Tournapull's ability to load and haul dirt under adverse conditions. He says, "These 'D's' maneuver and work well in wet, spongy stuff. They've got the power and stability to do a good job on slopes, too."

Edgar L. McNair, operator, states, "I've run two other small rigs, but the 'D' will *work* where the others won't go. Thing I like best is that it's easy to handle. I've operated for 10 years and this is the easiest . . . it doesn't take so much muscle power."

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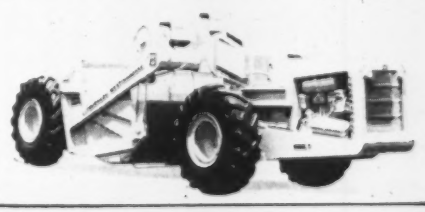

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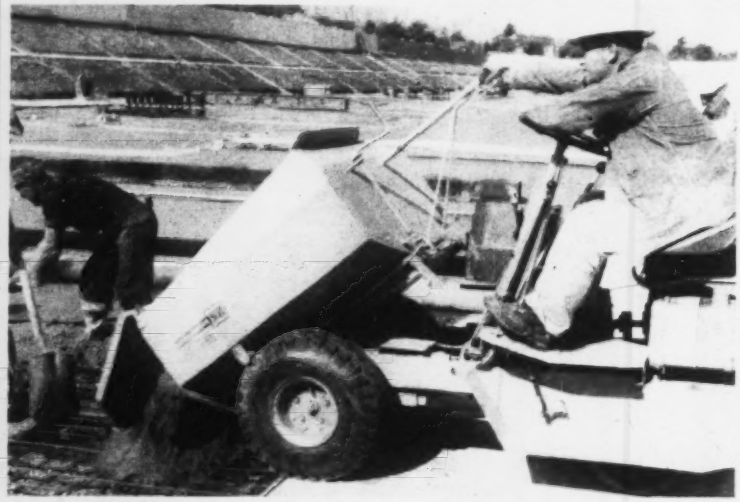

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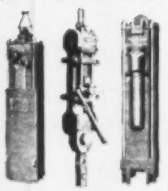

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would be for highways. Terms are that the work be done by French contractors selected by the lenders and presumably a cost-plus type of arrangement would be developed and all the equipment supplied by French manufacturers.

Panama is financing part of its highway construction with a multi-million dollar loan from United Fruit Co., and other countries are inaugurating various cooperative and volunteer programs for constructing farm-to-market roads.

More conventional financing has come from the International Bank for Reconstruction and Development—the World Bank—which issued three new highway loans in 1956 to an aggregate of $23.5 million. Since 1950, when the bank made its first highway loan, a total of 18 have been made—16 entirely for highways and two for highway transport. Total of the 18 loans is $165 million.

**U. S. Aids** In addition to assistance from the World Bank and private interests, the Road Federation officers noted that highway programs in about 70 countries and territories in Africa, South Asia, the Middle East, Far East, Latin America and Europe are receiving U. S. financial, technical or material aid.

Engineering services, including in some cases the actual management of highway programs and organization of highway departments, are being provided in nearly 40 countries. In others, consulting services only or assistance in the training of personnel are being given. Equipment and materials for road building are being supplied to many of the participating countries.

## Flexible Undersea Pipe To Be Used for Gas Line

A contract for laying a continuous flexible pipeline to carry natural gas underneath the Straits of Georgia from the British Columbia mainland to Vancouver Island is expected to be awarded by Magna Pipeline Co., Ltd., of Vancouver, before spring.

The $4-million, 6¾-in. OD pipeline will be laid along the 21 miles of ocean floor to serve customers of B. C. Electric Co., Vancouver.

Engineers say the new line will mark the first usage of flexible piping in a major undersea project to carry natural gas. It was first used by British Callenders Cables, Ltd., on a large scale when it laid the 132,000-volt electrical submarine cable from the mainland to Vancouver Island last autumn.

Besides eliminating dangers of breaks or leaks caused by underwater suspensions when rigid pipe is used, the flexible carrier reportedly will cost about $2 million less than rigid pipe.

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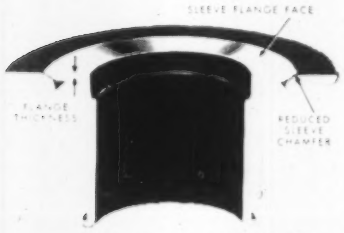


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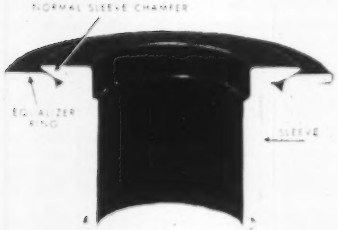


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At left is a typical example of inadequate reconditioning. Instead of replacing, as Lipe does, a worn or scored clutch sleeve with a new one, the rebuilder re-grinds the surface down through the case hardening to the soft metal beneath. That means the sleeve will wear quickly, and cause serious damage to the throwout bearing and a high rate of destructive slippage — *all greatly reducing the life of the clutch.* Such an improperly rebuilt clutch tested recently showed a total direct pressure loss of 120 lbs.!

Slipshod reconditioning always costs more in the long run. It pays to get genuine Lipe Factory-Exchange Tagged and Sealed Clutches. Contact your nearby authorized Lipe jobber* for quick exchange service.

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## Right to Rescind Contract Must Be Exercised Promptly

When the right to rescind a contract has accrued, it must be exercised promptly. Continued performance may be construed as a waiver of the right.

Earlier this year, the right to rescind was denied a subcontractor in the following circumstances: A general contractor signed a contract with the federal government for construction of a group of buildings in Maryland for the Veterans' Administration. Part of the work was sublet to the plaintiff. The subcontractor was given five months to complete his work, after receiving notice to proceed, unless delayed by "acts of God or causes beyond the control of either the general or the subcontractor."

The subcontract provided that the sub would have no claim against the prime contractor for increased costs resulting from delays caused by the government and that it would have no claims against the prime contractor for delays caused by the latter. It was provided, however, that the sub's sole remedy for delays would be an extension of time for performance, and, in the case of increased costs, submission of a claim to the government for the extra expense incurred.

Delays on the part of the government prevented the subcontractor from starting work for nearly 11 months. After performing part of the contract, the sub encountered other delays and finally suspended work completely. Claiming that the delays were so extensive as to excuse further performance, the sub refused to accede to the prime contractor's request that work be resumed.

Under a supplemental agreement executed several months later, work was resumed and the job was completed within the time specified as extended from time to time by the government. Neither party, in the supplemental agreement, waived any of the rights under the old contract.

The subcontractor concluded he was not bound by the terms of the original contract because he had been unreasonably delayed in performing the work. He therefore sued the prime contractor, seeking, as a basis for his recovery, the fair and reasonable value of the work performed. The action was dismissed by the trial court and the judgment was affirmed on appeal.

The appellate court held, after citing many cases, that the subcontractor by proceeding to perform part of the work after he had been prevented from starting the work almost a year after he was instructed to start the performance of the work, waived his right to rescind the contract and recover on the basis of fair and reasonable value. The court found as a fact that the delays in the work were caused by the acts of the government and unusual weather conditions that constituted acts of God for which the prime contractor was not responsible.

"A right to rescind, abrogate, or cancel a contract must be exercised promptly on discovery of the facts from which it arises."

[illegible]

## Element of Consideration In Promise of Extra Pay

Ordinarily the contract price limits the amount a contractor can recover for his work, and a collateral promise for pay more than the contract price is unenforceable in the absence of additional consideration to support the promise.

The following Ohio case illustrates the principle:

Plaintiff, a plumbing contractor, brought suit against the defendant, a residential construction company, to recover money due the subcontractor under three oral contracts whereby plaintiff agreed to furnish and install the plumbing in 85 houses to be constructed by the defendant. One contract covered the work in 22 houses, another covered 46 houses, and the third covered 17 houses. A unit price of $788 had been agreed upon under the first contract. Prior to the commencement of work, labor and materials substantially increased in price. In consideration of the subcontractor entering into the two subsequent contracts, the general contractor agreed to pay plaintiff, in addition to the base unit price of $788, the actual net increased cost of material on all work done under the three contracts, the amount of which was then undetermined. The increased cost amounted to $85.96 per unit, or $7,306.60 on the 85 houses. The subcontractor also sued to recover for some extra work performed.

The general contractor counterclaimed for defective performance of some of the work, and claimed that the agreement to pay the subcontractor more than the original contract price was void for lack of consideration. After the attorneys for both parties had had a conference with the judge trying the case, it was agreed that the court should allow the jury to determine as a question of fact whether the work was defective and whether there had been an agreement to pay the subcontractor additional compensation as a consideration for entering the two later contracts. The jury brought in a verdict in favor of the subcontractor, which judgment was affirmed on appeal.

The appellate court stated that, while it is well established that an agreement to pay a contractor more than the contract price for what he is under an obligation to do under the contract is void for lack of consideration, in the instant case, the promise to pay the increased cost of performing the first job was part of the consideration that induced the subcontractor to enter into the second and third contracts.

[illegible]

## Defects in Work May Result From Actions of the Owner

A contractor is not responsible for defects in work resulting from acts of the owner.

In an Illinois case, a road builder was allowed to recover the balance due under a contract with a construction company for construction of roads in a subdivision. The roads had deteriorated after construction and the company refused to complete payment. The court found that the road builder had substantially performed his contract and that the defects resulted, instead, from the manner in which the construction company had used the roads.

[illegible]

## Law Limits Work Changes Owner Is Allowed to Make

Construction contracts usually contain provisions authorizing the owner or its engineer to make changes in the work, but these have been construed to embrace slight rather than material changes.

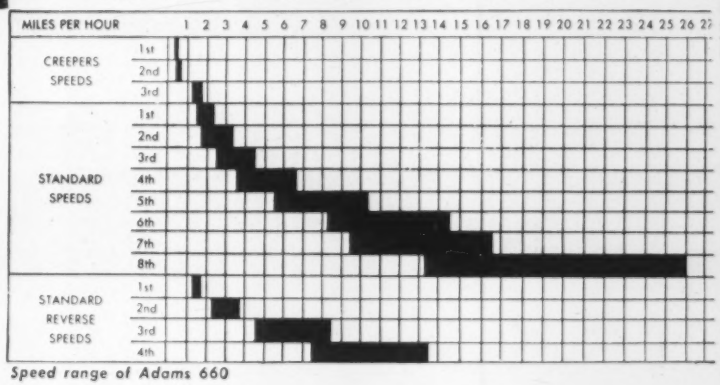
One of the leading cases states: "The customary provision . . . is limited, by the intention of the parties when the contract was made, to such modifications of the work described in the contract as do not radically change its nature or its costs. Material quantities of work required by such alteration, that are substantially variant in character and cost from that contemplated . . . constitute new and different work . . . for which the contractor may recover its reasonable value."

[illegible]

15 power-speed combinations (see chart below) let Adams grader work at fastest practical speed for any load. That means faster output on production jobs . . . more *applied* power for working in tough materials.

# hp for hp . . .

# up to 25% more push behind the blade




*Speed range of Adams 660*

By itself, the rated horsepower of a grader doesn't mean a thing. It is the *usable power at the blade* that counts.

How *much* of a grader's engine power is actually put to work (assuming conventional gear shift) depends on the gear train being used. Your gear-shift merely proportions your driving force between push and speed. Working in too low a gear-ratio, for a given load, wastes power that could be used to move the load faster. Working in too high a gear-ratio leaves the operator choice of working a very light cut or pulling down his engine to inefficient operation at close to stalling speeds.

### Up to 33% more forward speeds

That's the reason Adams gives you a full range of 8 forward speeds—more than most other graders. Operator has more freedom to work at *fastest practical speed* for any load condition . . . can complete assignments 10 to 25% faster, particularly on constant speed work such as ditching, oil mixing, spreading, and surface blading.

This production "edge" is yours in 4 models of Adams graders from the 80 hp "330" to the big 150 hp "660".

### Fast on shuttle work

In reverse gear, Adams gives you a range of 4 back-up speeds (instead of 2 in most graders) with a top of 13 mph. That means faster shuttle work, important today with the increasing number of utility jobs being assigned to graders.

Higher-than-average travel speeds of Adams graders – up to 26 mph – save you additional time on job-to-job travel.

### Extra lugging power when needed

Adams has an even wider gear range for extremely hard or tough materials. Optional "creeper" gears apply full horsepower at speeds down to 0.36 mph, with accompanying increase in tractive effort. You not only get extra power for ripping concrete, black-top, or blading in rocky or root-filled material, but you save wear and stress on grader, and have far more accurate control for finish grading.

This all adds up to more work capacity per rated engine horsepower. That's one reason Adams welcomes the chance to demonstrate alongside any other grader of comparable rating. May we recommend and quote on a size Adams for your current needs? Five models, rated at 60, 80, 104, 123, and 150 horsepower.

AG-18 G-b

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*A Subsidiary of Westinghouse Air Brake Company*

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**AiResearch turbochargers possess this all-important characteristic**

There's little quarrel in the diesel industry about the air-cooling principle being highly-desirable in a turbocharger. It eliminates the need for extra plumbing on installation, puts no additional burden on an engine's cooling system and makes for a lighter, smaller unit in relation to output.

AiResearch turbochargers now available have been designed on this principle — which promises to be universal in the future. In addition, our units increase power up to 100% depending on design and application of your engine, cut fuel costs, reduce noise and decrease or eliminate smoking. The removable rotating assembly makes them easier to maintain than other turbochargers.

We invite your inquiry on how you can improve the performance of your diesels by the application of our turbochargers.

BASIC SPECIFICATIONS FOR AIRESEARCH TURBOCHARGERS

| MODEL | T-10 | T-14 | T-15 | T-30-2 | T-30-6 |
|---|---|---|---|---|---|
| Diameter — in. nom. | 9 | 11.5 | 15.25 | 15.25 | 16 |
| Length — in. | 9 | 14.12 | 16.75 | 17.25 | 21.75 |
| Weight — lb. | 40 | 95 | 125 | 135 | 195 |
| Output — lb/min. (Standard Conditions) | 25-40 | 35-65 | 35-65 | 70-95 | 115-175 |

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AiResearch Industrial Division

*9225 South Aviation Blvd., Los Angeles 45, California*

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND SPECIALIZED INDUSTRIAL PRODUCTS

## Men & Job Briefs

**Business**—**Charles H. Zweifel** is the new chief engineer for Pacific Coast Engineering Co., Alameda, Calif., engineers, designers and fabricators. . . . **John H. Melvin**, formerly with the Ohio Natural Resources Department, has accepted an executive position with Pennsylvania Drilling Co., Pittsburgh. . . . **R. W. Vollmer** has been selected to fill the position of assistant to the general manager of the engineering and construction division of Koppers Co., Pittsburgh. . . . **Per Hall** has been named director and executive vice president of Foundation of Canada Engineering Corp., Ltd., with headquarters in Montreal. . . . **Hal W. Birkeland** of Tacoma, Wash., has become a partner in the consulting engineering firm of Anderson & Anderson, Tacoma. . . . **Francis W. Montamari**, formerly with the Institute of Inter-American Affairs, has been named to the staff of the Ohio River Valley Water Sanitation Commission in Cincinnati. . . . **Milton G. Leong** has announced the opening of offices in Berkeley and Vallejo, Calif., under the name of Milton G. Leong and Associates for the practice of civil and structural engineering.

**Associations**—**Clive D. Campbell**, deputy minister of public works and chief architect for the British Columbia government, has been elected president of the Architectural Institute of British Columbia. . . . **H. Christopher Medbery** is the new president of the San Francisco section of the ASCE. . . . **Felix H. Siri** has been elected president of the northern California chapter of the Associated General Contractors.

**Careers**—**Lt. Col. Robert B. Kemp** has been assigned to duty at Goose Bay, Labrador, in the Eastern Ocean District of the Corps of Engineers. . . . **Otto M. Rinderknecht** has been appointed chief of personnel for the Alaska Corps of Engineers. . . . **Col. Thomas J. Hayes**, chief engineer for the Omaha District for the Corps of Engineers, will vacate that post this summer to attend the Armed Forces Industrial College at Fort McNair in Washington, D. C.

**Retirements**—**William N. Lindblad**, chief of Pacific Gas and Electric Co.'s Bureau of Tests and Inspection, after 43 years of service. . . . **Lewis K. Maires**, supervisory engineer in the Bureau of Reclamation's engineering office in Denver, after 35 years of government service.


# FREE BOOKLET WAITING FOR YOU

## Shows how Atlantic Pneumatic Pipe Drivers Pay For Themselves!

The ATLANTIC Pneumatic Pipe Driver is sturdily built for today's improved high speed machines! *Fast* — no delay in coupling additional lengths of pipe — specially designed recess in driving head does not burr pipe.
Universal joint action between driving head and shank simplifies driving in small spaces. Wide size range. Fits standard pneumatic pavement breakers.

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1775 Broadway, New York 19

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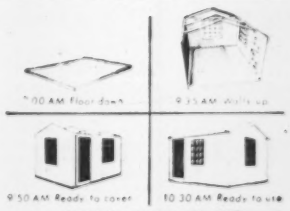
# 3 Man-Hours



PERMANENT but PORTABLE union-built construction buildings of finest kiln-dried, tongued and grooved West Coast lumber. No foundations needed. Sections bolt together quickly for strong, rigid, on-the-job service. Easily dismantled and moved. Buildings come complete with wooden floor, skids, roofing, doors, windows, hardware and prime-coated exterior.

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30' WIDE SERIES ideal for offices, workshops, sheds, storage. Extensible in 10' sections from 20' length to 250' and up. Post supported roof — no floor, 30' x 100', only $3448. F.O.B. West Chicago, Illinois. Available also in clear span.

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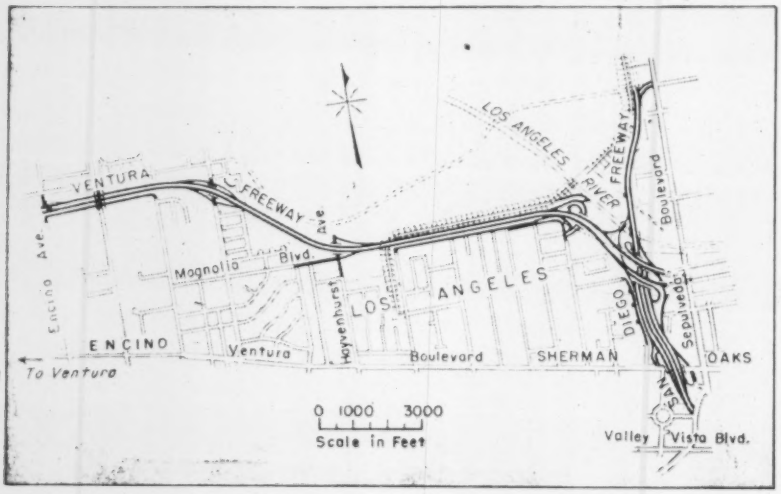


HOW INTERCHANGE links Ventura and San Diego Freeways, Los Angeles.

# $7.2-Million Freeway Interchange

Grade separation of these six- and eight-lane intersecting freeways in the Sherman Oaks-Encino section of Los Angeles provides full interchange of traffic with existing streets as well as between the Ventura and San Diego Freeways. In addition to this interchange with 3.5 miles of roadway sections are 10 prestressed concrete girder bridges, one equestrian underpass, one pedestrian overcrossing and 10 retaining walls.

California Division of Highways awarded this $7.2 million contract to the team of Oberg Brothers Construction Company and Oberg Construction Corporation on a low bid 2% under both the second low bid and the engineers' estimate.

L. R. Gillis and Cass M. Rose are district engineer and district office engineer.

Oberg Brothers have completed two earlier contracts on the Ventura and San Diego Freeways. One contract was for the $500,000 bridge that will take San Diego Freeway over Ventura Boulevard. This bridge will be open for traffic with the completion of the present job. The other contract covered two bridges on Ventura Freeway for a total of $700,000.

Paving is plant-mix asphalt and portland cement concrete placed on cement treated subgrade and base, 3.1 miles on Ventura and 1.6 miles on San Diego Freeway.

Drainage will be provided by 15-in. to 78-in. reinforced concrete pipe, 12-in. to 36-in. corrugated metal pipe, 30-in. asbestos bonded plain metal pipe and by 4-in. asbestos cement pipe. Sewers will use clay pipe with a diameter of 6 in. to 24 in.

The state furnishes paint, city electroliers and steel beams for temporary bridges.

Prevailing wage rates are $2.485 to $3.80 for skilled labor, $2.40 to $2.95 for semi-skilled and $2.30 for unskilled labor.

The seven bidders include:

| | |
|---|---|
| 1C Oberg Const. Corp & Oberg Bros. Const. Co., Inglewood, Calif | $7,201,496 |
| 2 Guy F. Atkinson Co., South San Francisco, Calif | 7,346,394 |
| 7 Winston Bros. Co., Monrovia, Calif | 9,680,006 |
| EE Calif. Dept. of Public Works | 7,364,094 |

| Bids: 11-29-56<br>Items: | Unit | Quantity | Unit Prices 1C | 2 |
|---|---|---|---|---|
| Portable barricades, timber | lf | 900 | $3.00 | $3.50 |
| Concrete, remove | cy | 200 | 25.00 | 20.00 |
| Pvmt, conc, remove | sy | 140 | 3.00 | 3.00 |
| Clear & grub | ls | job | 95,000 | 150,000 |
| borrow site & haul road | ac | 25 | 1,000 | 500.00 |
| Water suppl & equip, del & f | ls | job | 105,000 | 52,000 |
| Water, apply | Mgal | 74,000 | 0.80 | 1.60 |
| Origl ground, compact | sy | 120,000 | 0.04 | 0.03 |
| Excavation, roadway | cy | 1,095M | 0.35 | 0.32 |
| structure | cy | 78,000 | 2.00 | 1.80 |
| Backfill, structure | cy | 50,000 | 3.00 | 3.60 |
| Excavation, ditch & channel | cy | 1,700 | 1.50 | 1.40 |
| Haul | cy | 700,000 | 0.10 | 0.12 |
| Borrow, imported | cy | 1,100M | 0.80 | 0.67 |
| Subbase matl, imported | t | 281,500 | 0.80 | 0.75 |
| Pervious matl, imported | t | 11,000 | 2.10 | 2.15 |
| Course agg, slope protect | t | 17,500 | 2.20 | 2.70 |
| Exc slopes, prepare, erosion control | sy | 25,000 | 0.12 | 0.05 |
| Straw | t | 300 | 62.00 | 57.00 |
| Pipe, galv, ¾", water line markers | lf | 500 | 0.50 | 0.50 |
| 1½", supply line | lf | 2,150 | 1.00 | 0.60 |
| 2", supply line | lf | 750 | 1.40 | 0.75 |
| 2½", supply line | lf | 3,900 | 1.80 | 1.20 |
| Base, untreated | t | 165,450 | 2.10 | 2.60 |
| Subgr, cmt treat, mix, spread & compact | sy | 217,000 | 0.25 | 0.27 |
| Base, cmt treat, mix, spread & compact | sy | 46,000 | 0.35 | 0.24 |
| Portland cement | bbl | 13,500 | 4.60 | 4.20 |
| Asph emuls, cur seal, paint bind & seal coat | t | 90 | 60.00 | 50.00 |
| Asph, liqu, MC-2, cur seal | t | 220 | 50.00 | 47.00 |
| Asph, Liqu, SC-2, prime ct | t | 150 | 50.00 | 40.00 |
| Dikes, plant-mix surf, pl | lf | 17,000 | 0.30 | 0.28 |
| Asph, paving, plant-mix surf | t | 2,120 | 6.25 | 6.50 |
| Agg, mineral, plant-mix surf | t | 40,500 | 6.25 | 6.50 |
| Cut-off wall, pms, pl | lf | 650 | 0.55 | 0.55 |
| Drains & aprons, pms, pl | sy | 2,025 | 1.00 | 1.00 |
| Concrete, cl B, pavement | cy | 49,000 | 14.00 | 14.00 |
| Pvmt tie assemblies | ea | 48,000 | 0.50 | 0.50 |
| Concrete, cl A, struct | cy | 4,200 | 52.00 | 72.00 |
| bridges, 18,905 cy | ls | job | 985,000 | 1,020,000 |
| cl C, pipe reinf | cy | 340 | 25.00 | 25.00 |
| railing | lf | 1,296 | 7.00 | 7.00 |
| Waterstops, rubber | lf | 1,800 | 2.00 | 2.50 |
| Steel, reinf bar | lb | 435,000 | 0.11 | 0.13 |
| bridges, 3,192,000 lb | ls | job | 330,000 | 370,000 |
| Gird, prec prestr conc, f | ea | 18 | 6,300 | 5,200 |
| e | ea | 18 | 300.00 | 700.00 |
| Prestress steel & operation | ls | job | 6,500 | 6,500 |
| Piles, conc, f | lf | 72,060 | 3.00 | 3.10 |
| dr | ea | 1,696 | 80.00 | 60.00 |
| cast in dr hls | lf | 850 | 4.00 | 4.50 |
| Steel, struct, 382,000 lb | ls | job | 75,000 | 83,000 |
| Iron & stl, misc | lb | 114,000 | 0.30 | 0.35 |
| Open steel floor | ls | job | 1,500 | 4,000 |
| Stl, str, clean & paint | ls | job | 6,000 | 7,000 |
| Conc, cl B, curb, gutt&sidew | cy | 7,700 | 30.00 | 29.50 |
| Survey monuments | ea | 45 | 12.00 | 15.00 |
| Riprap, light stone, remove & replace | cy | 300 | 4.00 | 2.00 |
| hvy stone, remove & repl | cy | 5,200 | 2.00 | 2.00 |
| light stone | t | 130 | 6.00 | 10.50 |
| hvy stone | t | 30 | 10.00 | 10.50 |
| Gd rail, met plate | lf | 15,360 | 3.50 | 4.00 |
| Railing, stl | lf | 3,606 | 7.50 | 7.50 |
| Handrailing, pipe | lf | 438 | 3.00 | 2.70 |
| Railing, chain link | lf | 740 | 6.00 | 6.20 |
| Guide posts & markers | ea | 400 | 7.00 | 9.00 |
| New property fence | lf | 1,900 | 0.30 | 0.55 |
| Fence, chain link, 72" | lf | 40,000 | 1.55 | 1.60 |
| Gates, chain link, 15 | ea | 2 | 150.00 | 150.00 |
| Walk gates, chain link | ea | 20 | 70.00 | 60.00 |
| Fence, headlight deflector | lf | 230 | 2.50 | 2.50 |
| RCP, std str, 15" | lf | 60 | 5.50 | 5.00 |
| 18" | lf | 1,100 | 6.00 | 6.20 |
| 2,000-D, 18" | lf | 20 | 8.00 | 7.00 |
| std str, 24" | lf | 6,200 | 8.00 | 7.50 |
| 2,000-D, 24" | lf | 180 | 10.00 | 9.00 |
| std str, 27" | lf | 500 | 9.50 | 9.00 |
| 2,000-D, 27" | lf | 350 | 10.00 | 10.50 |
| std str, 30" | lf | 700 | 11.00 | 10.50 |
| 2,000-D, 30" | lf | 100 | 12.00 | 12.00 |
| st tstr, 36" | lf | 1,600 | 13.00 | 13.00 |
| 39" | lf | 30 | 15.00 | 15.00 |
| 42" | lf | 1,200 | 16.00 | 17.00 |
| 2,000-D, 42" | lf | 150 | 18.00 | 19.00 |
| std str, 45" | lf | 260 | 20.00 | 19.50 |
| 48" | lf | 330 | 21.00 | 20.50 |
| 51" | lf | 624 | 23.00 | 22.00 |
| 54" | lf | 400 | 24.00 | 24.00 |
| 57" | lf | 500 | 26.00 | 26.00 |
| 1,895-D, 57" | lf | 250 | 28.00 | 29.00 |
| std str, 60" | lf | 650 | 28.00 | 29.00 |
| 78" | lf | 624 | 40.00 | 40.00 |
| CMP, 12", 16-ga | lf | 174 | 5.00 | 3.50 |
| 18", 16-ga | lf | 450 | 7.00 | 4.50 |
| 24" 14-ga | lf | 280 | 8.00 | 7.00 |
| 36", 14-ga | lf | 70 | 11.00 | 15.00 |
| arch, 58"x36", 10-ga | lf | 170 | 21.00 | 25.00 |
| asb bond, 30", 14-ga | lf | 90 | 11.00 | 11.00 |
| Pipe, met, plain, asb bond, unddr, 30", 12-ga | lf | 700 | 13.00 | 13.00 |
| 14-ga | lf | 4,700 | 11.00 | 10.00 |
| Filter material | t | 22,000 | 2.10 | 2.50 |
| End sect, flared, for metal pipe, 8" | ea | 4 | 25.00 | 25.00 |
| 12" | ea | 4 | 25.00 | 30.00 |
| 18" | ea | 4 | 30.00 | 45.00 |
| 24" | ea | 2 | 50.00 | 60.00 |
| Downdrains, CMP, 8" | lf | 40 | 4.00 | 2.70 |
| spec assembl | ea | 8 | 120.00 | 250.00 |
| Drainage gate, autom, 30" | ea | 1 | 310.00 | 350.00 |
| MH, pipe shaft | lf | 300 | 20.00 | 25.00 |
| Drain tile, std, 6" | lf | 1,041 | 1.00 | 2.00 |
| ACP, 4" | lf | 7,290 | 1.75 | 2.50 |
| Roadway finish | ls | job | 10,000 | 10,000 |
| Traffic bars, raised | lf | 120 | 2.50 | 2.00 |
| Sewer pipe, clay, 6", SS | lf | 150 | 7.00 | 6.00 |
| 8", SS | lf | 1,000 | 8.00 | 6.20 |
| 8", ES | lf | 1,600 | 10.00 | 7.20 |
| 10", ES | lf | 1,100 | 9.00 | 13.50 |
| 12", SS | lf | 250 | 10.00 | 16.50 |
| 21" SS | lf | 125 | 20.00 | 21.00 |
| 21" ES | lf | 1,000 | 20.00 | 29.00 |
| 24", SS | lf | 600 | 21.00 | 25.00 |
| 21", remov | lf | 600 | 1.00 | 11.00 |
| MH, type B | ea | 11 | 400.00 | 360.00 |
| spec 5' | ea | 6 | 500.00 | 500.00 |
| type Q | ea | 2 | 300.00 | 370.00 |
| drop | ea | 2 | 500.00 | 400.00 |
| type F, junct chamber | ea | 3 | 300.00 | 430.00 |
| Lampholes, type X, special | ea | 2 | 300.00 | 130.00 |
| Chimney pipes, type D | ea | 5 | 200.00 | 110.00 |
| MH, abandon | ea | 15 | 75.00 | 60.00 |
| adjust to grade | ea | 1 | 400.00 | 50.00 |
| remodel | ea | 2 | 100.00 | 70.00 |
| type B, remove | ea | 5 | 100.00 | 82.00 |
| Hy light & illum sign syst | ls | job | 375,000 | 360,000 |
| Traffic signal system | ls | job | 27,500 | 35,000 |

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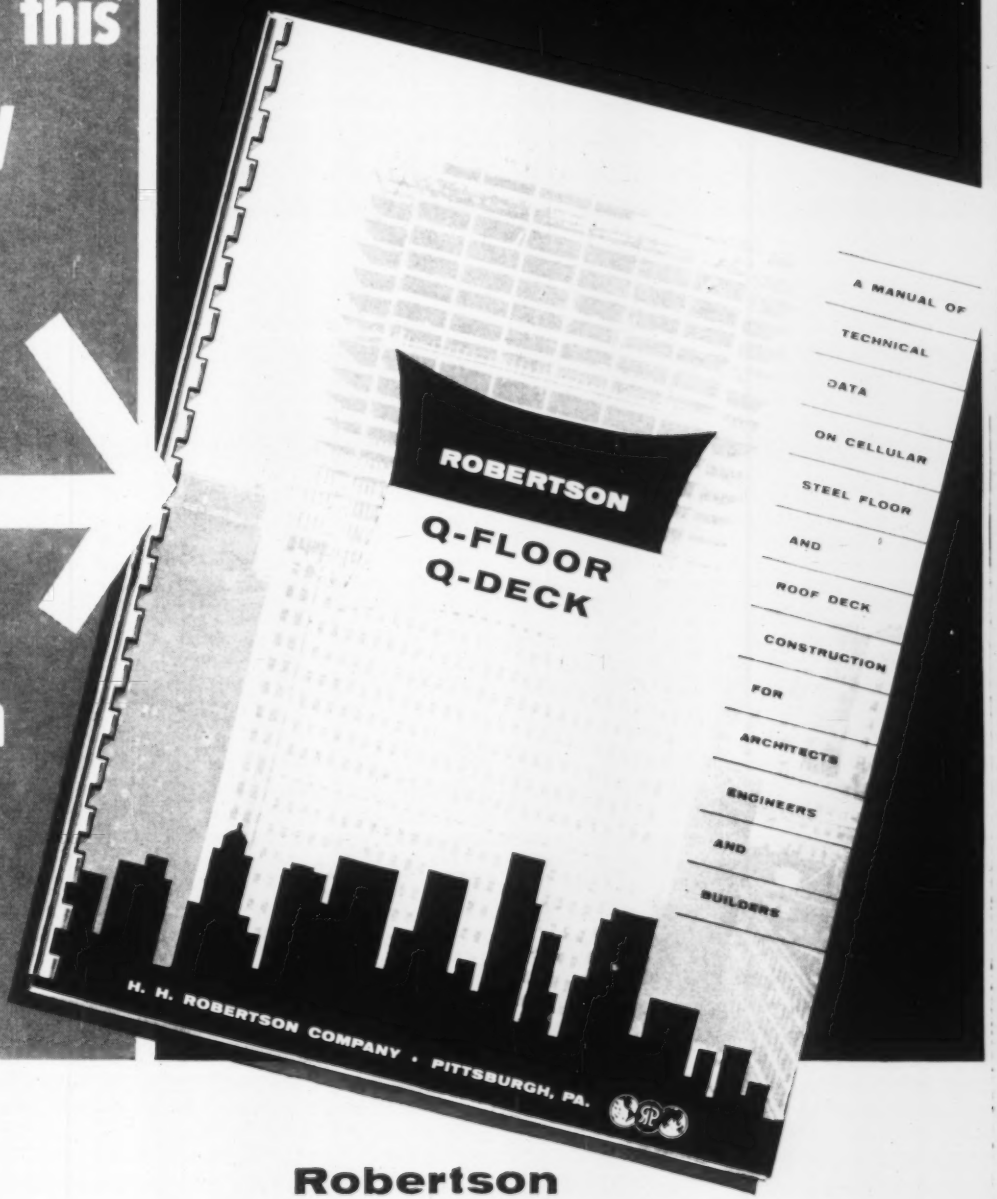
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# Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, Jan. 17; Next, Feb. 14.
- Wood Products; Glass; Explosives; Chemicals: Last, Jan. 24; Next, Feb. 21.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jan. 31; Next, Feb. 28.
- Wage Rates, Building Board, Lath, Insulation: Last, Jan. 31; Next, Feb. 28.

## CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

| | PORTLAND CEMENT* Per bbl. C. L. lots cash, dis. not deducted | | | SAND AND GRAVEL Per ton, carload lots | | | CRUSHED STONE Per ton, carload lots | | CRUSHED SLAG Per ton, carload lots, f.o.b. plant | | CONCRETE BLOCK 8x8x16-in.* truckload del.* per block | | CONCRETE Ready Mixed 1:2:4 del. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Paper | Bulk | Mortar | Gravel, 1½ in. | Gravel, ¾ in. | Sand | 1½ in. | ¾ in. | 1½ in. | ¾ in. | Sand grav. | Lt. wgt. agg | 50 cy & over |
| Atlanta | $4.31a | $3.79‡ | $3.57 | $2.18 | $2.25 | $2.50‡ | $2.18 | $2.33 | $1.55 | $1.65 | $0.175 | $ | $13.75g |
| Baltimore | 4.27c | 3.86c | 3.64c | 2.80‡a | 2.80‡a | 2.25‡a | 2.80‡a | 2.90‡a | 2.05‡a | 2.00‡a | .18 | .18a | 12.75 |
| Birmingham | 4.05 | 3.55‡f | | 2.50n | 2.50n | 2.10n | 2.75 | 2.75 | 1.55 | 1.65 | .18 | .18 | 12.55 |
| Boston | 4.90‡e | 4.52a | 4.70e | 3.00‡ | 3.00‡ | 3.00‡ | 1.65‡ | 1.80‡ | | | .23 | .275a | 14.00h |
| Chicago | 4.19a | 3.72a | 3.87 | 3.75‡b | 3.75‡b | 4.10‡b | 3.95‡b | 3.95‡b | 2.25‡ | 2.25‡ | .25 | .25b | 14.00p |
| Cincinnati | 4.22c | 3.81c | 3.90 | 2.29‡c | 2.34‡c | 2.34‡* | 2.04‡c | 2.04‡c | | | .205 | .25a | 12.90p |
| Cleveland | N.A. in C.L. | 3.74 | | 2.15‡f | 1.95f | 1.65 | 4.30‡a | 4.30‡a | 3.30‡a | 3.30‡* | | .23 | 16.15 |
| Dallas | 3.35a | 2.95a | 3.23 | 2.63 | 2.63 | 1.95 | 2.45 | 2.65 | | | .11e | .2875 | 11.25 |
| Denver | 4.09a | 4.19a | 4.09 | 1.90 | 2.05 | 1.20 | | | | | .22 | .245a | 10.70 |
| Detroit | 4.10a | 3.69a‡ | 3.73 | 4.50‡b | 4.50‡b | 4.25‡b | 3.75‡ | 3.75‡ | 3.50‡ | 3.50‡ | .23 | .24a | 14.20 |
| Kansas City | 4.45b | 4.25b | 4.25 | | | 1.70‡a | 2.00‡a | 2.00‡a | | | .21a | .24c | 13.50b |
| Los Angeles | 5.12a‡ | 4.65a‡ | 5.00 | 2.41‡a | 2.76‡a | 2.41‡a | 2.41‡a | 2.46‡a | | | .145fm | .255m | 12.95‡ |
| Minneapolis | 4.68a | 4.27a | 4.27 | 2.70‡ag | 2.70‡ag | 1.95‡ag | 3.25‡ag | 3.25‡ag | | | .19 | | 14.30f |
| Montreal | 3.11d | 2.66d | 3.50 | 1.95‡a | 2.20‡a | 2.25‡a | 1.95‡a | 2.20‡a | | | .20 | .20a | 10.80ek |
| New Orleans | 3.75a | 3.15a | 3.70 | 2.44 | 2.44 | 2.00 | | | 1.45 | 1.65 | .275 | | 13.65 |
| New York | 4.93a | 4.25a | 3.88 | 3.05‡k | 3.05‡k | 2.15‡k | 2.90‡l | 2.90‡l | | | .25 | .30b | 16.10an |
| Philadelphia | 4.34‡ 4.90‡a | 3.94‡ 4.31‡a | 3.70‡ 4.33‡ | 2.85‡ap | 2.85‡ap | 2.35‡p | 2.70‡ | 2.80‡ | 2.00 | 2.35 | .24‡.30 | | 13.80de |
| Pittsburgh | 4.45a | 3.76a | 3.75 | 2.40‡ | 2.40‡ | 2.20‡ | 2.60‡ | 2.60‡ | 2.15 | 2.15 | .25d | .31 | 14.00 |
| St. Louis | 4.01‡ 4.33e | 3.61‡ 3.93e | 3.86‡ 4.18 | 3.25am | 3.10am | 2.40‡ 3.10am | 1.60‡ | 1.70‡ | | | .24 | .30e | 12.75‡ 13.25 |
| San Francisco | 3.94e | 3.54e | | 2.02 | 2.02 | 2.12 | 2.17 | 2.17 | | | .24 | .28el | 12.50e |
| Seattle | 4.30a | 3.75a | | 4.00‡m | 4.00‡m | 4.00‡m | 4.50‡m | 4.50‡m | | | .26 | .32 | 13.30p |
| Toronto | 4.03 | 4.03 | 4.03 | 2.40‡ | 2.40‡ | 2.05‡ | 2.20 | 2.20 | 2.20 | 2.20 | .25 | .29c | 15.25 |

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a Less 10¢ disc, 15 days. *b Less 2% disc, 15 days. *c Less 10¢ disc, 10 days. *d Truckload lots, deliv. 10¢ disc, 20 days. *e Truckload lots. *f Fob mill, add $13.11 to $19.16 per car switching charges. *g fob mill + freight. *h LCL.

SAND GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e ½". *f Pea gravel. *g Less 5% for cash. *h Less than 5 tons. *i Plus 5% mun. & prov. tax. *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *o 1-3 mi zone. *p Add 10¢ for ea. add'l mi zone.

CONCRETE BLOCK: *a Cinder. *b Waylite. *c Haydite. *d Celocrete. *e 5½ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *l Less 2% for cash. *l F.o.b. plant San Rafael. *m F.o.b. yard.

READY MIXED CONCRETE: *a 5 cu. yds. or over del. Man. *b 25 cu. yds or more. *c 10-100 cy. brackets. *d 1-3 mi. zone. *e 2,000 lb comp. *f 2,800 lb. comp. *g Less 25¢ disc, 15 days. *h Less 50¢ for cash. *l 8% off for cash. *j 2% off for cash. *k Federal tax included. Add 5% mun. & prov. *l 1-2½-3½. *m F.o.b. yard. *n Plus escalator clause. *o Add 15¢ for ea. add'l 3-mi zone. *p Includes 50¢ heating charge.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

### CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

| | Bulk | | Bulk | | Bulk | | Bulk | |
|---|---|---|---|---|---|---|---|---|
| Richard City, Tenn | $3.30† | Buffington, Ind | $3.25† | Steelton, Minn | $3.45† | Muskegon, Mich | $3.30† | Toledo, O | $3.30† |
| Clinchfield, Ga | 3.30† | Independence, Kan | 3.30† | Leeds, Ala | 3.15† | Saginaw, Mich | 3.30† | Milwaukee, Wis | 3.35† |
| Kingsport, Tenn | 3.30† | Hannibal, Mo | 3.35† | Duluth, Minn | 3.45† | Wyandotte, Mich | 3.30† | Green Bay, Wis | 3.35† |
| West Des Moines, Iowa | 3.35† | Northampton, Pa | 3.20† | Hudson, N. Y | 3.20† | Buffalo, N. Y | 3.40† | Ironton, O | 3.30† |
| Nazareth, Pa | 3.20† | Universal, Pa | 3.45† | Alpena, Mich | 3.20† | Oswego, N. Y | 3.45† | Montreal City | 2.56† |
| Bath, Pa | 3.20† | Waco, Tex. (+ 10¢ tax) | 3.35† | Detroit, Mich | 3.30† | Cleveland, O | 3.35† | W. Winfield, Pa | 3.45† |
| Lesley, Pa | 3.20† | Giant, S. C | 3.35† | Howes Cave, N. Y | 3.20† | Alsen, N. Y | 3.20† | Security, Md | 3.20† |

† Prices to hold for first quarter of 1957.

## PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

| | PAVING BRICK AND BLOCK | | | PAVING ASPHALT Per ton, less than 80 penetration | | ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration | | CUTBACK ASPHALT MC per ton | | ROAD OIL Per gal. | ASPHALT EMULSION RSI Per gal. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Granite Per M lots of 50,000 4x4x8 in. | Brick per M 3x4x8½ in. carload lots | Wood per sq. yd. 3½ in. 16-lb. treat | Tank car | Drums | Tank car | Drums | Tank car | Drums | Tank car | Tank car | Drums |
| Atlanta | | | | $40.50 | $45.00 | $0.15 | $0.20 | $0.125/Pc | $0.28/Pc | $0.14 | $0.125 | $0.30 |
| Baltimore | 150.00‡ | | | .23.00a | | .095a | 0.185a | 10acE | 19acE | 10a | .105a | 0.195a |
| Birmingham | | 82.00a | | | | | | | | | | |
| Boston | | | | .21.00ap | 46.00ap | 21.00as | 46.00as | 11aFc | 21aFc | .11a | .171aG | .25aG |
| Chicago | 150.00‡ | 90.00‡b | 3.95/4.00‡j | 23.05b | 33.05b | 21.40b | 31.40b | 11acH | 19acH | .085b | | |
| Cincinnati | | | | | | | | | | | | |
| Cleveland | | 82.00d | 6.30g | 25.00A | | 25.00A | | 1115AacF | | | .1115AG | .21AG |
| Dallas | e | 40.00 | e | 25.20 | 44.29 | .1066 | .1894 | 28.55 | 50.08 | .1030 | .1066 | .1894 |
| Denver | | 50.00 | | | | | | | | | | |
| Detroit | | 112.00 | | 29.65 | | 29.65e | | 1285acI | | .1026 | | .35 |
| Kansas City | e | e | e | 21.00cl | | 21.00n | | 0925acJ | | .085c | 0.125 | |
| Los Angeles | e | | e | 18.50dmx | | 18.50dzz | | 20.00dzK | | 19.00de | .09‡ | .19‡ |
| Minneapolis | | | 3.73A | 29.50 | | .10 | 0.125ac | 0.115 | | 0.115 | .134 | |
| Montreal | e | e | e | 27.00m | 39.60m | .135n | .198n | 16.90nuE | 20.90nuR | .132n | .197ns | .239ns |
| New Orleans | | | | 17.60e | o | 17.60es | o | .085acc | o | .085B | .09BL | |
| New York | | | 3.70f | 26.80gCD | 47.32gD | 26.80gCD | 47.32gD | 1273acDF | .2139acDF | | .1273CD | .2168D |
| Philadelphia | 175/185 | 110/120 | 4.05 | 22.00 | | 22.00 | | .0965aF | | .095 | | |
| Pittsburgh | 165.00 | 48.00 | 4.50 | 27.00 | 38.00 | .10 | .21 | 27.00E | 40.00K | .098 | .11 | .224 |
| St. Louis | | | | 20.63.0 | | .1764 | | .0925acM | | 0.16 | .105 | |
| San Francisco | | 70.00e | | 23.00g | 30.00g | 23.00gks | 40.00gks | 21.00gN | 41.50gN | 24.75e* | .10g | .19* |
| Seattle | | | | 27.00g | 40.50h | 27.00gz | | 28.50K | | 24.75ft | .10h | .11hr |
| Toronto | | | 4.50 | 34.50 | 50.00 | 0.19 | 0.232 | 0.20ac | 0.25ac | [0.182 | 0.20 | .252 |

‡ Delivered.

PAVING BRICK & BLOCK: *a CL. *b 3 x 4 x 8. *c 2¼ x 8¼ x 4. *d LCL, truck deliveries. *e Not used. *f 2" interior 6# treat. *g 3". *h 2" tr, 8#. *l 3 x 3½ x 8. *j 2½", 6 lb. tr.

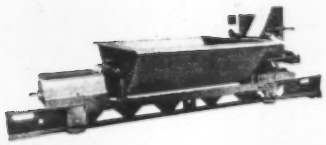
ASPHALTS: *a Price at plant, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segunda. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 penetr. *l Less than 100 penetr. *m 40-80 penetr. *n Fed. tax included; add 5% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60-70 penetr. *q 40-85 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 85-200 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks. *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *C Bulk. *D Prices based on transporting to Manhattan via truck. *E RC. *F Also RC. *G Also MS, SS. *H RC 0-5 incl. *I MC 4. *J MC, RC .0675. *K MC 3, 4 & 5. *L MS. *M MC 1-5, RC 1-5, .089. *N MC 3. *O fob Roxanna, Ill. *P F.o.b. refinery Savannah. $0.09 gal., tank cars; $0.20 gal., drums.

Rex Moto-Mixers, in all standard sizes...the industry's leader in carrying capacity and combined speed of charge, mix and discharge.

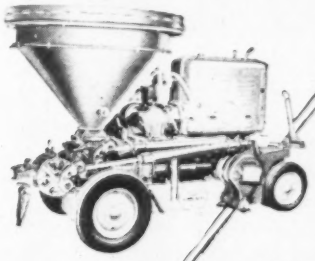
Rex Building Mixers, rugged...efficient ...designed for one-man spotting and easy hitching and towing. Capacities from half-bag to three-bag.

# The "Leadership" Line

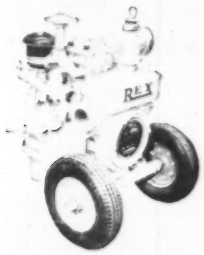
## IS THE REX LINE



Rex Railporter, for concrete and bulk materials placement...runs self-propelled and unattended on a single portable rail.



Rex Pumpcrete, pumps concrete through portable pipeline...transports, elevates and places concrete in a single economical operation.



Rex Self-Priming Centrifugal Pumps, capacities from 4000 to 90,000 g.p.h....wheel or skid mounted...powered by gasoline engine electric motor or diesel engine. The pumps that never let you down.

Rex products for concrete mixing and placement are designed and built to the "leadership" standards of CHAIN Belt Company. The creative abilities of Rex Engineers are working constantly to develop new and improved products for the construction industry.

Rex features are often imitated. Rex quality and performance are never equalled.

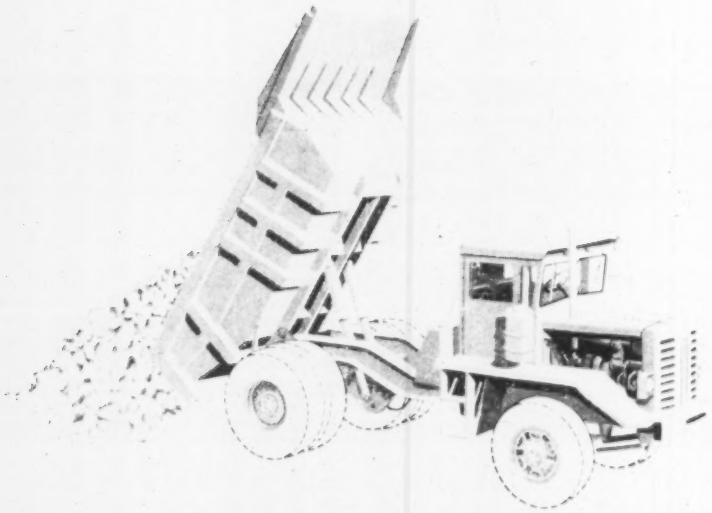
For your profit's sake...for your customer's satisfaction...use the leader; use Rex. See your Rex Distributor, or write Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wis.

CONSTRUCTION REX MACHINERY

PAVERS • SPREADERS • FINISHERS • FLOATS • CURING MACHINES • FORMS

CHAIN BELT COMPANY

MOTO-MIXERS • BUILDING MIXERS • PUMPCRETE • RAILPORTER • PUMPS

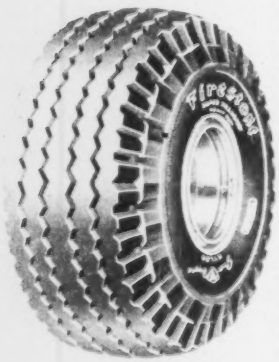


# Which tires would you put on this truck?

**SITUATION:** Excavating for highway between Bonne Terre and Halifax, Missouri, Clarkson Construction Co. trucks haul dolomite from 1,000-ft. long, 20-ft. deep cut to nearby fill. Terrain—rough, with steep 30° downgrade. Average load of 23.49 cu. yds. weighs 61,074 lbs.

**FIRESTONE'S RECOMMENDATION:** Rock Grip Excavators for dual drives withstand load shocks, ward off cuts and bruises. Angled treads prevent side slipping. Rib Excavators up front make steering easier. These tires are built with tough cut-resistant tread rubber and Safety Tensioned *Gum-Dipped*® nylon cord bodies for extra strength and impact resistance.

**JOB RESULTS:** Clarkson trucks operate 10 hrs. daily in 5-min. cycles. *No downtime has been caused by tire failures!* Operators express complete satisfaction with lowered costs and raised performance standards, directly resulting from the recommendations of their Firestone Sales Engineer. He's the man who knows all tires and understands how to use them best for your profit, too. Contact him today—through your local Firestone Dealer or Store.



**SUPER TRANSPORT**

Most widely used heavy-duty tire for long, low-cost highway performance.

**SUPER ALL TRACTION**

Rugged, deep treads for off-road traction; smooth highway operation.

**ROCK GRIP EXCAVATOR**

Toughest tire ever built for severe off-road service. It's cut-resistant too!

**RIB EXCAVATOR**

Rugged, thick-bodied tire with great lateral stability for easy steering action.

**Firestone**

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# Bids Asked—Low Bidders—Contracts Awarded—First Section—

*Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager*
*J. A. MAHONEY, M. WETZEL, L. M. FELIX, M. E. SCIORRA, F. S. DEMBEK, Reports.*
*J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.*

## NEW ENGLAND

### HEAVY CONSTRUCTION—BA

† Mass., Boston—RAILROAD TRACKS: BA 2-19—Dist. P. Wks. Office, 1ND, 495 Summer St., Zone 10, realignment and repair railroad tracks and road beds, Boston Naval Shipyard, in Boston area. NBy 8537, Spec. 8537. Plans deposit $10. CD 10-4-56.

### BUILDINGS—BA

Vt., Rutland—ACADEMY: BA 2-15—Mount St. Joseph's Academy, 132 Convent Ave., academy addn. and alterations, Convent Ave., $500,000. Plans deposit $50, refundable. Extended date. Julian W. Goodrich, Vest, Shelburne Rd., South Burlington, archt. CD 12-12.

Mass., Somerville—HOUSING—BA 2-21—Somerville Housing Auth., 30 Memorial Rd., Mass. 61-2 Housing, Highland Ave., $450,000. Plans deposit $50, refundable. Abbott Assocs., Inc., 131 State St., Boston, archts. CD 5-16-56, under LB.

### BUILDINGS—SLC

▲ Conn., Cheshire—PLANT: Waterbury-Farrell Foundry & Machine Co., 455 Bank St., Waterbury, soon lets contract plant, Johnson Rd., $2,000,000. Fetherston-Thompson, Inc., 211 State St., Bridgeport, engrs. CD 12-4.

Mass., Plainville—FACTORY: D. A. Makepeace Co., div. Union Plate & Wire Co., Dunbar St., Attleboro, soon lets contract factory, $100,000. Gilbert Small & Co., Inc., 10 State St., Boston, engr.

### HEAVY CONSTRUCTION—LB & CA

▲† Lane Constr. Corp., P.O. Box 911, Meriden, Conn., LB $1,620,000, est. $1,700,000, aircraft parking area, Naval Air Station, NBy 5050, Spec. 5050-57. BRUNSWICK, ME.: Dist. P. B. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass. Bids Jan. 25. CD 1-18.

NEW HAMPSHIRE—State Dist. P. Wks. & Hys., Concord, N. H.—A. D. Ingalls, Inc., Beech Ridge Rd., York, Me., LB $138,932, (6 bidders) surf. treated gravel roadway, 1.518 mi., and 167 ft. steel beam bridge, Spaulding Turnpike, Rochester-Strafford.

N. H.—R. W. Payne, Keene, N. H., LB $163,581, surf. tr. gravel roadway, Lyed and Ridge, Cheshire Co.

N. H.—Manchester Sand, Gravel & Cement Co., Inc., P.O. Box 536, Manchester, N. H., LB $369,087, (4 bidders) b. conc., 1,942 ft., Main St., Laconia, Belknap Co. Bids Jan. 25. CD 1-16.

† J. Slotnick Co., 99 Chauncy St., Boston, Mass., LB $180,672, est. $185,024, reset storage bldg., addition, Arctic Air Force Base, ENG-19-016-57-131, South Burlington, BERLIN-MEN, VT.: U. S. Eng., 150 Causeway St., Boston, Mass. Bids Jan. 22. CD 1-5.

† Jefferson Constr. Co., 75 First St., Cambridge, Mass., CA $623,000, est. $682,270, Sciences Laboratory, Air Force, Cambridge Research Center, ENG-19-016-57-93, LINCOLN, MASS.: U. S. Eng., 150 Causeway St., Boston, Mass. CD 1-15, under LB.

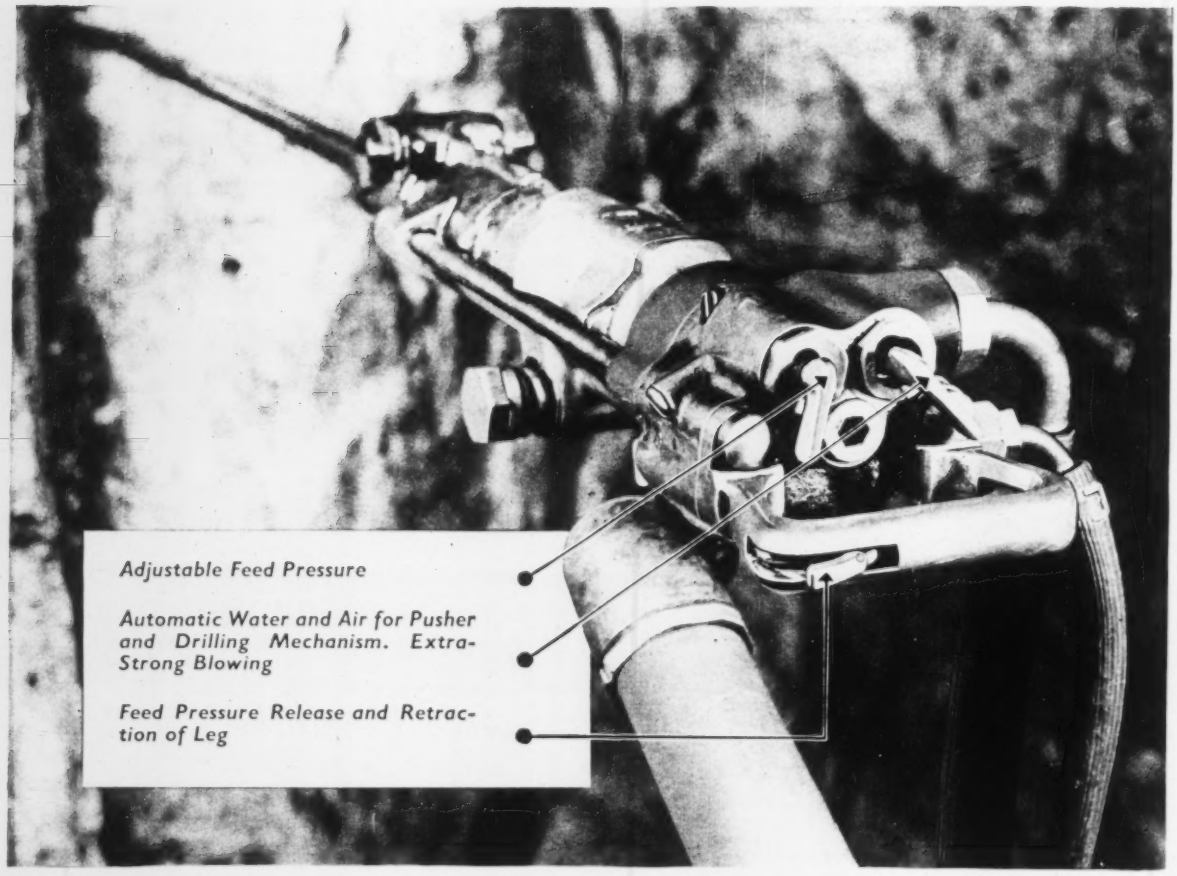
† P. Wk. Office, Bids 418, U. S. Naval Air Station, Quonset Point, R. I., rejected bid Dec. 27, drainage and repair of runways and taxiways, blisters and repairs to Zone Ave. and B. St., U. S. Naval Air Station, NBy 8504, New Bids Sept. 30, 8504-59, QUONSET POINT, R. I.: W. Hendrickson. CD 12-14.

† P. Wk. Office, Bids 418, U. S. Naval Air Station, Quonset Point, R. I., rejected bid Dec. 27, repair compass road at Landing Area, U. S. Naval Air Station, NBy 8198, New Bids Sept. 30, 8198-59, QUONSET POINT, R. I.: W. Hendrickson. CD 12-14.

▲ CONNECTICUT—State Hy. Dept., State Office Bldg., Hartford.

Conn.—Russell Constr. Co., Inc., 411 Whalley Ave., New Haven, Conn., LB $119,704, (10 bidders) Proj. 107-74, Local to No. 15, Conn., present unreinforced bridge over Eight Mile Brook and approaches to Barry Rd., Division No. 15, reset unreinforced bridge over Nonnewaug River and approaches on Bethlehem Rd., Waterbury.

Conn.—City Iron Works, Inc., 2261 New Park Ave., Hartford, Conn., LB $1,294,926, (7 bidders) Proj. 164-87, Glastonbury-Hebron, 4.7 mi., from Glastonbury-Hebron town line to Hebron center, 2 lanes, 24 ft. wide, bituminous concrete, Rte. 94, Glastonbury-Hebron, Rte. 85, Hebron-Marlborough, Rte. 66, Marlborough-Portland, Rte. 17, Middletown-Portland, Rte. 9, Middletown-Cromwell, Rte. 3, Cromwell-Rocky Hill, Rte. 15, Wethersfield-Newington, Rte. 5, Newington-Hartford, Rte. 6, Hartford-Bloomfield, Rte. 75, Windsor-Windsor Locks, Rte. 20, Windsor Locks-Suffield, Rte. 75, Suffield-Enfield, Rte. 5, Enfield-Windsor Locks, Rte. 75, Windsor Locks-Suffield, Rte. 20


Adjustable Feed Pressure
Automatic Water and Air for Pusher and Drilling Mechanism. Extra-Strong Blowing
Feed Pressure Release and Retraction of Leg

# RETRACTABLE LEG AND ONE-HAND GRIP-CONTROLS SPEED DRILLING TIME

For years Atlas Copco have been the world's largest manufacturers of pusher leg drills. Since 1937 when Atlas Copco, far ahead of any other manufacturer, introduced their first pusher leg drills, they have continuously improved the design of these drills. Their latest development, the Atlas Copco 'Lion', combines an unequalled ease of operation together with a high drilling rate—both contributing to a higher footage per manshift.

### All controls under one hand

The Atlas Copco Lion is the first drill to have all the valves which operate the drill under the control of one hand. *Full control without having to move the hand from the backhead!*

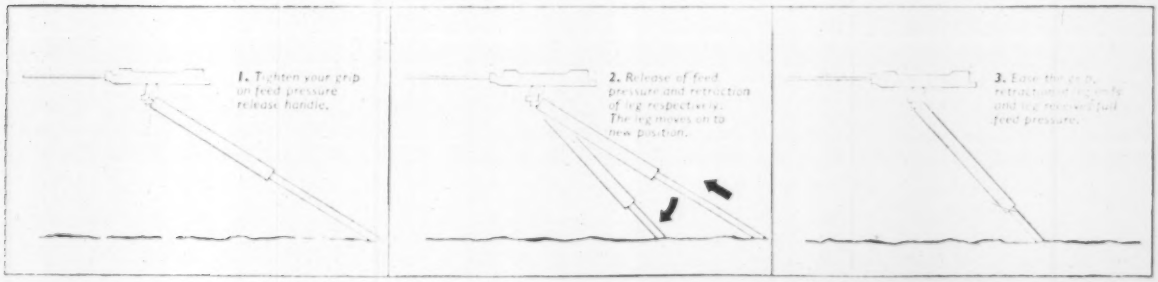
The valves are all easy to operate. By the use of only the fingertips the drill can be started or shut off, the feed can be adjusted to the pressure required, or retracted for an advance, and the extra air-blowing can be brought on to clean the holes.

All the control handles have been designed in such a way that they are well protected. While using them the operator's hand is never near the wall or roof of the drift. The Lion is the first pusher leg drill with controls placed for drifting.

### Retractable leg saves time

When the leg has to be moved the feed pressure is easily released by squeezing the hand grip. By further pressure on the grip the leg retracts automatically.

## *Pusher leg moves forward with drill in full action*


1. Tighten your grip on feed pressure release handle.
2. Release of feed pressure and retraction of leg respectively. The leg moves on to new position.
3. Ease the grip, retraction stops instantly and leg receives full feed pressure.

When the leg is in the new position suitable for continuous drilling, retraction stops and the feed pressure comes back by loosening the grip of the hand. *All this can be done while the drill is still running.*

This new idea of a retractable leg enables quicker repositioning of the leg and reduces the number of steel changes, thereby increasing footage per manshift. When drilling high holes it is now far easier to alter the position of the leg more frequently in order to maintain an optimal feed angle and feed pressure.

### Packed with power for deep holes

The Lion has a drilling rate at least 30% higher than other rock drills of the same weight. Furthermore, it is designed so that it can maintain its high speed *even when drilling deep holes.* This means quickly drilled deep hole rounds and a faster, steadier advance. You'll also find that the Lion reduces *to a minimum* the gauge wear of the bits in abrasive rock. And owing to the ease with which the feed pressure is released and brought back into action, the Lion is a *handier* drill to work with in fissured rock.

### Sandvik Coromants—the right steel for the Lion

All Atlas Copco drills—and this goes for the Lion—have been developed from the earliest stages with Sandvik Coromant tungsten-carbide-tipped integral steels and detachable bits. No drill or steel developed separately could ever give such equivalently high performances as this drilling combination. It is today the most widely used in the world, responsible for drilling more than one billion feet per year.

**Free Demonstration!** *Wire, 'phone or write* today *to any one of these offices and see the Atlas Copco Lion in action for yourself.*

**U.S.,** Atlas Copco Pacific, Inc., 930 Brittan Avenue, San Carlos, California. Atlas Copco Eastern, Inc, P.O. Box 2568, Paterson 25, N.J.

**CANADA,** Atlas Copco Canada Ltd., Montreal Airport, P.Q.

**MEXICO,** Atlas Copco Mexicana S.A., Apartado 56, Torreon, Coahuila.

Without changing the grip of the hand the driller can easily position and control the machine, saving time and reducing fatigue.

**The ATLAS COPCO GROUP** puts compressed air to work for the world. It is the largest group of companies specializing solely in the development and manufacture of compressed air equipment. It embraces Atlas Copco companies or agents manufacturing or selling and servicing Atlas Copco equipment in ninety countries throughout the world.

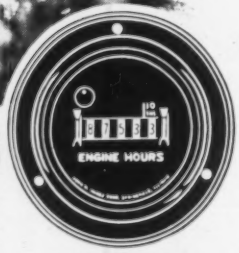
**Atlas Copco**

0551

*Manufacturers of Stationary and Portable Compressors, Rock-Drilling Equipment, Loaders, Pneumatic Tools and Paint-Spraying Equipment*

## *Less down time... longer life when protective maintenance is done ON TIME!*

# HOBBS Engine Hour METERS




Modern engineers consider maintenance of powered equipment in terms of HOURS instead of miles. ON-TIME lubrication, filter replacement, oil change, overhaul, etc., means better performance and longer equipment life.

The Hobbs Meter, a true electric timing instrument, records actual running time in HOURS and MINUTES — not a revolution 'counter'. Two models — direct-reading (upper illustration) and pointer type. Approved and recommended by leading manufacturers of construction equipment. Ruggedly built . . . easy to install in the field. See your factory branch, representative or distributor . . . or WRITE:

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A Division of Stewart-Warner Corporation

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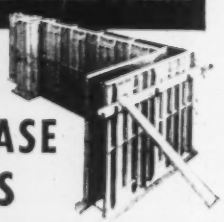
**EFCO "LIFETIME" STEEL FORMS**



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▲ PENNSYLVANIA

Indsco Bldg. Constr. Co. . . . $1,112,815

P. N. B. Putman Co. . . . CA $515,605

Jas. D. Morrissey, Inc. . . . A $2,368,660

John Meehan & Son, Inc. . . . $83,744

Edward Ackerman, Jr. . . . $75,850

† Gaskill Constr. Co. . . . LB $298,800

▲ MARYLAND

Wm. L. Teer & Co. . . . $815,602

F. P. Asher Jr. & Sons, Inc. . . . A $555,199

BUILDINGS—LB & CA

D. Fortunato, Inc. . . . A $777,999

Gilbert Olsen Co., Inc. . . . CA $782,386

Thatcher Constr. Co. . . . A $350,000

J. Wayne Ortlip . . . $344,000

▲ D. S. Warfel Assoc. . . . A $1,497,046

William M. Greenhouse . . . $150,000

J. Ehrenhalt . . . $350,000

United Insurance Co. of America . . . $375,000

General Public Warehouse Co. . . . $119,000

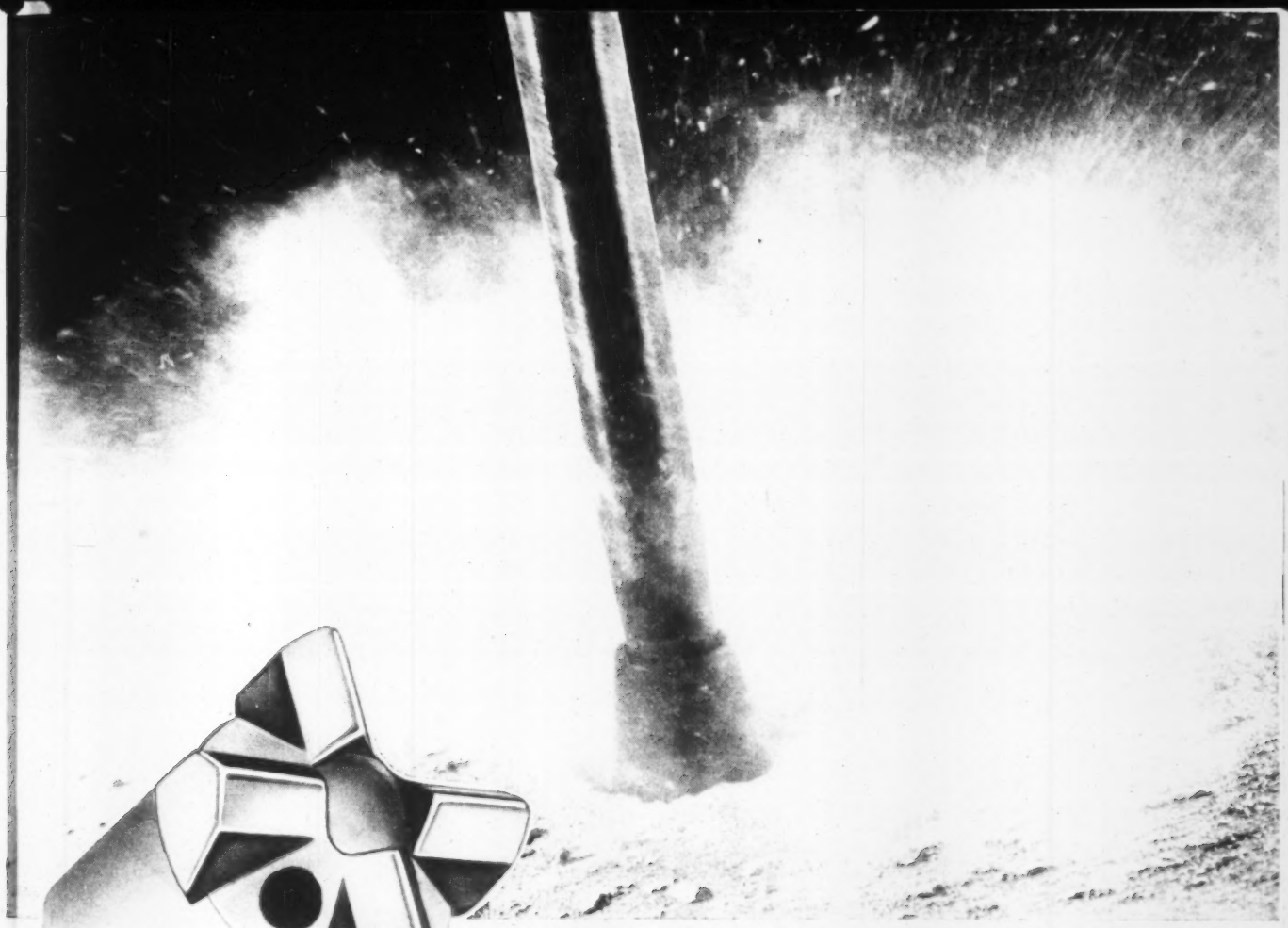
Leighman K. Hausemen . . . CA $100,000

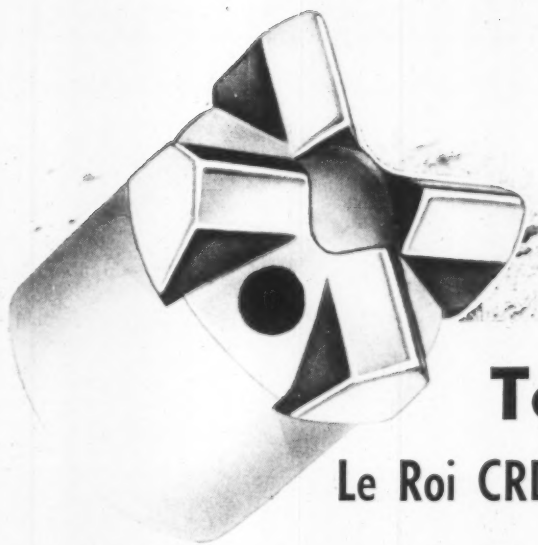
▲ Allen K. Dautlener . . . $3,000,000

▲† Joseph Bilsen Constr. Co. . . . A $1,301,400

▲ Harry Poretsky Sons, Inc. . . . $1,500,000

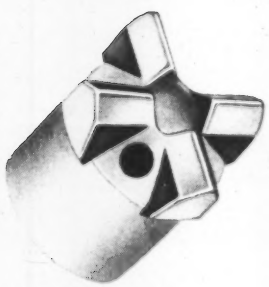
(Continued on page 110)





# Take a close look...

## Le Roi CRD one-use bits save you money 4 ways



**1. You drill faster** with low-cost Le Roi CRD one-use bits because they have a special offset gauge feature which permits the use of thinner wings, and a steeper reaming angle. Greatly reduced binding, ample clearance for cuttings.

**2. You have less drill-steel breakage** with Le Roi CRD one-use bits. The method of bit attachment eliminates threads on the drill rod. And since a drill rod is only as strong as the root diameter of its threads, the tapered, *threadless* CRD's give you a stronger, power-saving union, and longer drill-steel life. Other savings result because you also reduce drill-steel handling, and reconditioning costs.

**3. You have less wear and tear, too.** Rifle bars, rifle nuts, and chucks will last longer because Le Roi CRD's are designed to reduce binding and ease strain on rotation parts of your drills.

**4. They cost less, initially.** CRD's cost less than 25¢, half as much as comparable multiple-use bits. There's a big saving in time and labor spent handling bits, too. CRD's knock-off, throwaway use eliminates unscrewing, and cuts out all of the time-consuming traffic between operator and bit-sharpening shop.

**It costs practically nothing to try them.** You don't need to invest in special threading or reconditioning equipment when you use Le Roi CRD one-use bits. Satisfy yourself that they can save you money. Get a can today, and start cutting your drilling costs right away.

AT-77

**LE ROI** Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Cleveland air tools, tractair, portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

(Continued from page 108)

## SOUTH

### HEAVY CONSTRUCTION—BA

† S. C., Aiken — (Penalty) — FACILITY—BA 2.12— [illegible] Air.

† VIRGINIA — BA 2.12 — [illegible]

† Va., Portsmouth — BA 2.22 — [illegible]

† Kentucky — BA 2.12 — [illegible]

† Va., Quantico — [illegible]

† Va., Quantico — SPRINKLER SYS — BA 2.27—Dirk, [illegible] Naval Command [illegible] Air Station, NBs 8293, Norfolk, Va. CD 8 28 under Public Buildings.

### BUILDINGS—BA

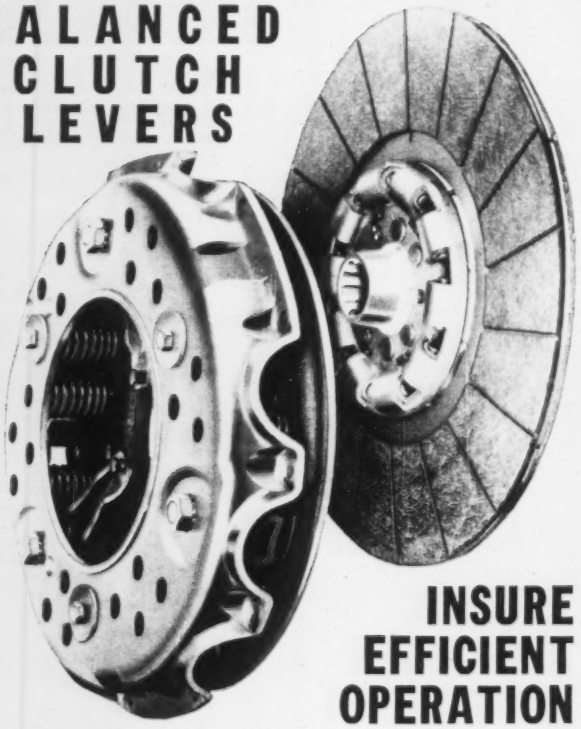
▲ Ga., Augusta — SHOPPING CENTER—BA 2.12—Howard J. Burkhardt & Co., 1220 Maple Dr. N. E., Atlanta, negotiate Plaza Shopping Center to have 29 stores on area of 160,000 sq. ft. parking lot for 2,000 autos on 30 acre site, $1,500,000. Henry & Henry, 1722 Peachtree St. N.W., Atlanta, archts. J. W. Austin, Jr., 1447 Peachtree St. N.E., Atlanta, engr.

Fla., Homestead — OFFICE—BA 2.14—Irwin Hays & Wm. Berger, 970 Kroome Ave., 3 story penthouse 134x142 ft. CBS & RC, H & B Const. Bldg., N. Krome Ave. and N.W. 9 St. Henry E. Brown, Jr., 1224 N. Krome Ave., and Nunnelley & Duncan, S. A. 2 Krome Ave. Steel joists, steel [illegible]

Ala., Huntsville — SCHOOL—BA 2.20—Bd. Educ., Huntsville, Northeast Junior High School, $750,000. Van Keuren, Davis & Co., 3004 7th Ave. S., Birmingham, archts.

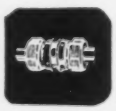

# ROCKFORD

## BALANCED CLUTCH LEVERS



Small Spring Loaded

Heavy Duty Spring Loaded



Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Speed Reducers

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# CLUTCHES


### HEAVY CONSTRUCTION—LB & CA

VIRGINIA — [illegible] Hy. Office Bldg., 1221 E. Broad St., Richmond,

Va., B. A. Fowler Co., 11464 E. Main St., Salem, Va. LB $82,452 — 10 bidders: 215 ft. bridge approaches, Flat Creek, Rte. 632, State Proj. 1304-11-12, [illegible] $126,776 — 5 bidders: 192 ft. bridge and approaches, Rte. 619, Broad Run, State Proj. 1376-27-15, Fed. Proj. [illegible] 15, Prince William Co.

Va., L. S. Abernathy & Co., Rte. 8, Glenn Allen, Va. LB $94,468 — 6 bidders: 135 ft. bridge and approaches, Little River, Rte. 715, State Proj. 1342-15-16, State Proj. [illegible] 11, Hanover Co.

Va., Donald H. Selvage, Amherst, Va. LB $77,012 — 8 bidders: 172 ft. bridge and approaches, Rte. 601, South Amherst, State Proj. 1354-12-15, Fed. Proj. S-64-1 [illegible], Amherst Co.

Va., T. A. Loving & Co., Inc., Warwick Blvd., Bldg. [illegible], Newport News, Va. — $447,956 — 6 bidders: 752 ft. bridge and approaches, Rte. 604 over South Anna River, Rte. 684, State Proj. [illegible] Fed. Proj. F-014-1 [illegible], Hanover Co. Bids Jan. 25. CD 1-16.

VIRGINIA — [illegible] Dist. Hwy., Central Hy. Office Bldg., 1221 E. Broad St., Richmond, [illegible] Jan. 25. 145 ft. bridge and approaches, Pamunkey Creek, Rte. 623, State Proj. 1351-16-17, Fed. Proj. S-107 [illegible], Louisa Co. CD 1-16.

VIRGINIA — [illegible] Hy. Office Bldg., 1221 E. Broad St., Richmond, [illegible]

Va., Charles W. Barger & Son Constr. Co., Box 778, Lexington, Va. LB $119,833 — 3 bidders: 8 [illegible] 42 ft. bridge and approaches, Rte. 716, State Proj. [illegible] Fed. Proj. [illegible] Rockbridge Co.

Va., A. B. Torrence & Co., Box 217, Luray, Va. LB $133,304 — 10 bidders: [illegible] base, 8" soil cement, 4.5 mi., Rte. 614, State Proj. 1369-13, Fed. Proj. [illegible] 12, Page Co. Bids Jan. 25. CD 1-16.

County Paving Co., Fairfax Circle, Fairfax, Va. LB $93,295 — 5 bidders: [illegible] asphalt, curb, gutter, etc., Washington Blvd. from N. [illegible] to Glebe Rd. and N. Quincy St. from Washington Blvd. to [illegible] ARLINGTON, VA. Arlington County Court House, Arlington, Va. Bids Jan. 29. CD 1-14.

† Wiley Maddox, Chincoteague, Va. LB $93,694 — 12 bidders: [illegible] Naval Air Station, NBs 8239, CHINCOTEAGUE, VA. P. Wks. Offs. 11th Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Jan. 22. CD 8-23.

Ernest Randa, Mountain Parkway, Rte. 2, Bound Brook, N. J. LB $338,348 — 13 bidders: [illegible] 21 integrated coverage sys., Accurite Collecting Sewers, FAIRFAX, VA. Bd. Supvrs., Fairfax Co. Court House, Fairfax, Va. Bids Jan. 17. CD 1-14.

▲ NORTH CAROLINA — State Hy. & P. Wks. Comm., Raleigh

N. C., Jesse M. Coble, Box 441, Greensboro, N. C. LB $175,490. est. $100,000-$175,000, structures, Proj. 2-357, Jones and Carteret Counties. LB $224,996. est. $250,000-$300,000, culvert, [illegible] 10.7 mi., US [illegible], Proj. R121, IN-709 [illegible], Duplin Co.

N. C., Columbus Contr., Whiteville, N. C. LB $274,421. est. $250,000-$300,000, structures on [illegible] mi. US 401, Proj. 8332, IN-704 [illegible], Cumberland Co.

N. C., Crosby Constr. Co., Inc., Box 292, Union, S. C. LB $108,759. est. $100,000-$125,000, structures on 15.21 mi., US 701, Proj. 3085, F-244 [illegible], Bladen Co.

N. C., W. F. Brinkley & Son Constr. Co., Granite Quarry, N. C. LB $293,643. est. $300,000-$500,000, structures on 8.69 mi., US 21, Proj. 6405, F-717 [illegible], Iredell Co.

N. C., Owen Constr. Co., Inc., Greensboro, N. C. LB $111,682. est. $100,000-$125,000, replace [illegible] bridges on NC 66 and replace existing bridge at Germanton, Proj. 7522, S-66 [illegible], S-875 [illegible], Stokes Co.

N. C., A. M. Tuck, Inc., Greenwood, S. C. LB $80,008. bridge over H&A River on County Rd., Proj. H. S. 7707-A, Alamance Co. Bids Jan. 22. CD 1-10.

▲ NORTH CAROLINA — State Hy. & P. Wks. Comm., Raleigh

N. C., Barrus Constr. Co., Box 495, Kinston, N. C. LB $636,790. est. $400,000-$500,000, CABC, b. conc. binder and surf., 18.43 mi., Proj. 2-357, Jones and Carteret Counties.

N. C., J. F. Cleckley & Co., Dramsburg, S. C. LB $292,346. est. $250,000-$300,000, CABC, sand asph. base, b. conc. surf., 10.25 mi., US 17, Proj. 1545-5F-[illegible], Bl. Martin Co.

N. C., Barnhill & Long, Inc., Tarboro, N. C. LB $156,112. est. $175,000-$200,000, grading, 3.525 mi., US 301, Proj. 8432, IN-704 [illegible], Cumberland Co.

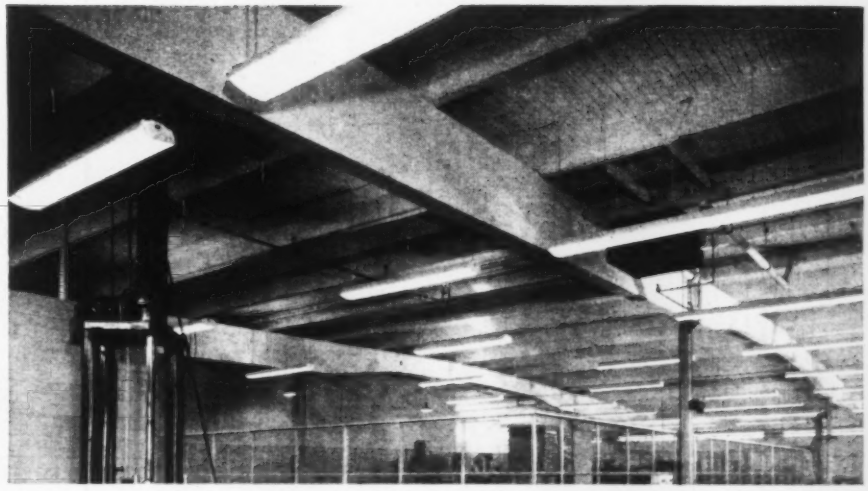
N. C., Dickerson, Inc., Monroe, N. C. LB $113,382. est. $100,000-$125,000, STBC, bit. surf., 5.76 mi., Proj. 1-106, S-882 [illegible], Bertie Co.; LB $77,104. est. $75,000-$100,000, STBC and bit. surf., 3.362 mi., Proj. 1-504, S-886 [illegible], Hertford Co.; LB $120,198. est. $125,000-$150,000, b. conc. binder and surf., Conc. H and I, 18.87 mi., US 52, 52-A, 601 and N. C. [illegible], Proj. B.S. 11-64-74-102 [illegible], S-910-1117, Surry Co. LB $473,273. est. $450,000-$500,000, STBC, b. conc. binder and surf., 12.94 mi., NC 50, Proj. 2448, F-718 [illegible], B.S. 26-25-121, Johnston and Sampson Counties. LB $629,161. est. $400,000-$500,000, grading, subgrade cont. and asph. base, b. conc. surf., 15.21 mi., US 701, Proj. [illegible], S-214-7, Bladen Co.

N. C., Mount Airy Grading Co., Mount Airy, N. C. LB $911,631. est. $400,000-$500,000, grading, 10.76 mi., [illegible] Proj. R121, IN-709 [illegible], Duplin Co.

† N. C., James F. Powell, Jr., 2410 Williamson Dr., Raleigh, N. C. LB $119,370. est. $100,000-$125,000, CABC and asph. base, b. conc. surf., 2.13 mi., US 701, Proj. [illegible], Columbus Co.

(Continued on page 112)

Cascade Manufacturing Company, Portland, Oregon, uses cantilevered beams and purlins to frame the roof structure and to support monorail cranes and air conditioning units. Architects Engineers: The Austin Company, Seattle; general contractor: Ross B. Hammond Company, Portland.



# 180′ x 180′ with only 8 Interior Posts

**using structural framing of cantilevered glulam beams and purlins by Timber Structures, Inc.**

Here are over 30,000 square feet of factory area with clear span space for efficient manufacturing and materials handling. Cantilevered glulam beams spaced at 40′ with heavy timber decking over cantilevered purlins spaced at 8′ provide three 60′x180′ bays, separated only by 8 interior posts.

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**CONSTRUCTION MACHINERY CO., WATERLOO, IOWA**

(Continued from page 110)

$618,150.

White Constr. Co., ...
$313,660.

† A. J. Jenkins & Son, Atlanta, Ga. ... $118,654

▲ MacDonald Constr. Co., ... CA $2,080,900.

▲ FLORIDA ...

▲FLORIDA
Smith Engineering & Constr. Co., ... CA $1,148,694.

Frank J. Rooney, ... $700,000.

Bushnell Steel Co., ... LB $197,396.

▲ MISSISSIPPI ...

L & A Contg. Co., Hattiesburg, Miss. ... CA $2,143,066; ...

Paul Anthony Constr. Co., Inc., ... CA $432,898; ...

Blvd. Constr. Co., Grenada, Miss. ... CA $198,661; ...

W. E. Blain & Son Contractor, ... CA $153,802; ...

H. D. Bouchillon, Durant, Miss. ... CA $173,591; ...

Bowyer & Johnson Constr. Co., ... CA $96,569; ...

Cobb Bros. Constr. Co., Inc., ... Meridian, Miss. ... CA $97,988; ...

Newsom Bros., Columbus, Miss. ... CA $362,576; ...

R. B. Tyler & Co., Inc., 1446 Levering St., Louisville, Ky. ... CA $251,787; ...

▲† R. B. Tyler & Co., 1446 Levering St., Louisville, Ky., and Hyde Constr. Co., ... LB $1,645,270; ...

## BUILDINGS—LB & CA

▲ Virginia Engineering Co., Inc., 50 24th St., Newport News, Va. CA $3,397,226; ...

A & P Constr. Co., 419 W. 22 St., Norfolk, Va. LB $770,000; ...

† Triangle Constr. Co., Laurens Rd., Greenville, S. C. CA $968,684; ...

▲ Grover Constr. Co., Box 2421, West Palm Beach, Fla. CA $1,024,000; ...

Winchester Constr. Co., 1537 Spruce Ave., Tallahassee, Fla. LB $364,000; ...

▲ J. A. Jones Constr. Co., P.O. Box 966, Charlotte, N. C. CA Est. $3,000,000; ...

▲ Foster & Creighton, American National Bank Bldg., Nashville 3, Tenn. LB $2,644,000; ...


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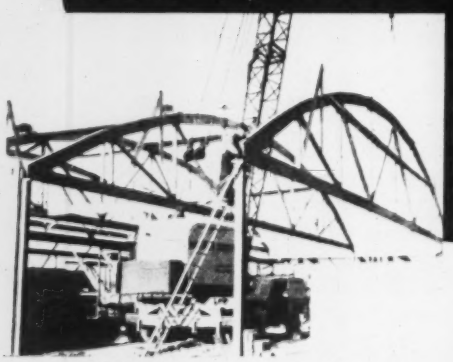
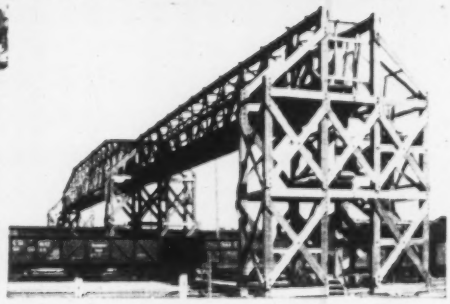


Erecting 100' Rilco monocord trusses — Big Bear Store, Lincoln Park, Michigan



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## MIDDLE WEST

### HEAVY CONSTRUCTION—BA

ILLINOIS—BA 2-14—Illinois State Toll Highway Comm., 20 N. Wacker Dr., Chicago, Contr. SNI-3A Bridge T1-5, 3 span girder struc., delivered at E. Hazelcrest, Ill. before Aug. 1 '58; Bridge T7-7, 5 span girder struc., del. Naperville, Ill. before Aug. 1 '58; Bridge E1-12, 2 span plate girder at Aurora before March 1 '58, 4,748,000 lb.; Contr. SNI-3B-4 span beam struc., delivered at Blue Island before Aug. 1 '58; bridge 3 span beam deliv. at Downers Grove before March 1 '58, 1,572,000 lb. Joseph K. Knoerle & Assoc., 155 N. Wacker Dr., Chicago, engrs. CD 5-11.

O., Dayton—BA 2-14—Comrs. Montgomery Co., Court House, sewage treatment plant improv., Miamiville Sewer Dist. Plans deposit $20. Earl Riben, 127 N. Perry St., county sanitary engr.

### BUILDINGS—BA

O., Fairborn—SCHOOL—BA 2-21—Bd. Educ., Fairborn, 2-story, high school addn., $548,000. Walker, Nolan & Assocs., 12 W. Monument St., Dayton, archts. CD 12-27.

Mich., Wyandotte — SCHOOL — BA 2-27 — 84 Edic. Heintzen, Pub. Schools, Dist. 250 Mt. Elizabeth Burns Elementary School, Alum Crest project $2[illegible] Cecil Hewlett & Luckenbach Assocs., arch's, Wyandotte Bldg., Birmingham, architects. LD 2-22-57

O., Shelby — HEATING, BA 2-27 — Alterations, heating, 237 Fourth Ave. Shelby Hotel Co., owner, 237 Fourth Ave., Shelby. Work will include [illegible] concrete work, [illegible] electric and heating [illegible] piping consisting of [illegible] Work will include [illegible] Station. ES0-4e-022-47-21

▲ O., Solon — WAREHOUSE, BA 2-27 — Kilgore Corp., 25 E. 7th St., Cincinnati, $[illegible] sq. ft. warehouse and office, Aurora Rd., $[illegible] Plans deposit $75. Hixson, Tatter & Assocs., 2300 Park Ave., Cincinnati, engineers. CD 2-27

## HEAVY CONSTRUCTION—LB & CA

R. L. Langston Co., Inc., 4320 Gerber Rd., Dayton, O., CA $101,358 (3 bidders) sanitary relief sewer, Pleasantdale Dr. from Riverside Ave. north to Stoner Ave., DAYTON, O. Dept. Service & Public Utilities Bldg., Third and Ludlow Sts., Dayton, O. Bids Jan. 3.

Contractors Constr. Co., 4304 Pearl Rd., Cleveland 24, O., LB $308,579 (5 bidders) Sect. A, covering W. Chestnut Hills Creek, PARMA — Info: Fred W. Newsome, Serv. Dir., City Hall, Parma 29, O. Bids Feb. 5.

Curro Constr. Co., 4300 E. Commerce Bldg., Cleveland 14, O., LB $466,353, Sect. B, covering W. Chestnut Hills Creek, Parma, O.

ILLINOIS — Dept. P. Wks. and Buildings, Div. Hwys., Springfield.

Edgar Stephens Constr. Co., Carlyle, Ill., LB $351,707. 0.67 mi. concrete base course and 0.15 mi. concrete base course, widening on Ill. Rte. 37 from near Mitchell St. in Salem southerly to Ill. Rte. 161. Marion Co. Bids Jan. 22. CD 1/15.

▲ ILLINOIS—State Toll Hy. Comn., 20 N. Wacker Dr., Chicago.

American Bridge Division, U. S. Steel Corp., 208 S. LaSalle St., Chicago, Ill. LB $4,496,730. Cont. T-8A grading, one bridge, struc. 0.6 mi. beginning Franklin Ave. ext. across Chicago, Milwaukee & St. Paul R.R. tracks to [illegible] Rd. CD 1/2, under St. Hwys. and Roads.

▲ ILLINOIS—Ill. State Toll Hy. Comn., 20 N. Wacker Dr., Chicago.

ITHC—S. J. Groves & Sons Co., 1100 W. Reynolds St., Springfield, Ill. LB $4,426,288. Cont. E-1D, grading, draining, paving, appurts., precast concrete bridges beginning 2400 ft. W. of State Rte. 59 ext. 3,000 ft. E. of Rte 5, 67 mi., DuPage Co.;

ITHC—Eric Bolander Constr. Co., Winchester St. and E. A. Myer Constr. Co., North Chicago, Ill. LB $2,699,793. Cont. T-11A grading, draining, paving, appurts., precast concrete bridges beginning Lake Cook Co. Rd. ext. north 1.071 mi., Lake Co.;

ITHC—McCarthy-Mass-Dillon Co., Algonquin, Ill. LB $4,115,242. Cont. N-4C, grading, draining, paving, appurts., precast concrete bridges beginning S. of village of Gilberts ext. E. 6.40 mi., Kane Co. CD 1/7.

▲ ILLINOIS — State Dept. P. Wks. & Bldg., Div. Hwys., Central Bldg., Springfield.

Ill.—Allied Structural Steel, 20 N. Wacker Dr., Chicago, Ill. LB $166,770 (4 bidders) furnishing, delivering steel for grade separation on Oak Park Ave., Cook Co.; LB $175,392, furnishing, delivering structural steel for grade separation at Ridgeland Ave., Chicago, Cook Co.; LB $269,700, furnishing, delivering structural steel for grade separation, Northwest Expressway, Cook Co.; LB $180,894 (4 bidders) furnishing, delivering steel for grade separation, Cook Co.; LB $122,625 (3 bidders) furnishing, delivering steel for grade separation, Northwest Expressway, Cook Co.; LB $176,580 (3 bidders) furnishing, delivering steel for grade separation, Northwest Expressway, Cook Co.;

Ill.—Bethlehem Steel Co., [illegible] Bethlehem, Pa., LB $496,910 (4 bidders) furnishing, delivering steel for grade separation on Northwest Expressway, Cook Co.; LB $437,600, (3 bidders) furnishing, delivering steel for grade separation, Ferdinand Ave., Northwest Expressway, Cook Co.; LB $247,432 (3 bidders) furnishing, delivering steel for grade separation, Cook Co.; LB $364,774 (5 bidders) furnishing, delivering steel for bridge [illegible] Riverside Dr., Cook Co.;

Ill.—Illinois Steel Co., Jacksonville, Ill. LB $172,788 (5 bidders) furnishing, delivering steel for separation structure in East Peoria, Tazewell Co.; LB $249,004 (5 bidders) furnishing, delivering steel for 2 bridges in East Peoria, Tazewell Co.; LB $175,810 (5 bidders) furnishing, delivering steel for girder bridge 0.6 mi. east of Springfield, FAS Rte. 4, Sangamon Co.;

Ill.—Vierling Steel Works, 53 W. Jackson St., Chicago, Ill. LB $224,940 (5 bidders) furnishing, delivering steel for grade separation on Northwest Expressway, Cook Co.; LB $131,393 (6 bidders) furnishing, delivering steel for grade separation at Addison Road, Cook County Expressway, Cook Co.; LB $93,073 (6 bidders) furnishing, delivering steel for grade separation at Oak Park Ave., Cook Co.;

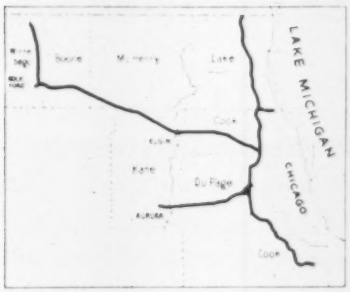
Ill.—Wendnagel & Co., 600 W. Jackson Blvd., Chicago, Ill. LB $119,643 (4 bidders) furnishing, delivering steel for grade separation at Oak Park Ave., Cook Co.; LB $199,353, furnishing, delivering steel for grade separation, Cook Co.;

Ill.—American Bridge Div., U. S. Steel Co., 208 S. La Salle St., Chicago, Ill. LB $304,437 (4 bidders) furnishing, delivering steel for grade separation on Northwest Expressway, Cook Co.;

Ill.—Bennett Industries, Peoria, Ill. LB $95,875 (5 bidders) furnishing, delivering steel for grade separation at Lombard Ave., Cook Co.;


# ADVERTISEMENT FOR BIDS

# Northern Illinois Toll Highway




## Bids to be opened February 28, 1957

### CONTRACT ST-1

**The work to be done under this Contract consists of:**

The furnishing, fabricating, shop painting, delivery and erecting of all structural steel for the superstructure of Bridge ST-5, beginning at a point east of Ashland Avenue and crossing Ashland Avenue, Metra Yards of the Illinois Central Railroad, South Park Avenue, Wood Avenue and ending at a point west of Wood Avenue, all between Station 252 + 42 and 254 + 28.50 of the Tri-State Route of the Northern Illinois Toll Highway in Cook County, Illinois.

**The approximate quantity of the structural steel for the work is as follows: Girder Spans, 6,330,000 lbs.**

## Bids to be opened February 21, 1957

### CONTRACT T-13A

The work to be done under this Contract shall be commenced on May 15, 1957, or on such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this Contract shall be completed on or before July 31, 1958, and consists of:

The grading, drainage, paving, the construction of appurtenances, and the erection of precast concrete bridges for approximately 13.5 miles of the Northern Illinois Toll Highway, Tri-State Route, in Construction Section T-13A, thereof, beginning at a point approximately 0.36 mile north of Belvidere Road, State Route 120, on Tri-State Route Station 856 + 00 in Warren Township, Lake County, Illinois, and extending northerly along the project centerline to a point approximately 200 feet north of Town Line Road, TR 56, at Tri-State Route Station 1092 + 00 in Newport Township, Lake County, Illinois.

**The approximate quantities of the principal items of work are as follows:**

| | |
|---|---|
| Roadway Excavation, unclassified | 750,000 Cu. Yds. |
| Borrow | 360,000 Cu. Yds. |
| Selected Subgrade | 122,000 Cu. Yds. |
| Granular Subbase | 70,000 Cu. Yds. |
| 10" Reinforced P.C.C. Pavement | 214,000 Sq. Yds. |
| 3" Bituminous Concrete Shoulders | 111,500 Sq. Yds. |
| Structural Concrete | 6,600 Cu. Yds. |
| Reinforcing Steel | 866,000 Lbs. |

### CONTRACT CNI-1

**The work to be done under this Contract consists of:**

The furnishing, delivering and erecting of prestressed concrete cylinder piles for approximately 56 bridges on the Northern Illinois Toll Highway. The work to be let on the North Illinois Route extending northwest from Chicago, approximately 55 miles to Illinois-Wisconsin State Line, on the Tri-State Route extending north from the Illinois-Indiana State line south of Chicago, approximately 50 miles to the Illinois-Wisconsin state line north of Chicago, and on the East-West Route extending west from Chicago approximately 43 miles to Aurora, Illinois. The prestressed cylinder piles shall be 24 inches outside diameter and shall have a minimum shell thickness of 4½ inches.

**The approximate quantities of the principal items of work are:**

| | |
|---|---|
| Prestressed Concrete Cylinder Piles, Furnishing and Delivering | 53,600 L. F. |
| Prestressed Concrete Cylinder Piles, Erecting | 52,300 L. F. |

### CONTRACT PNI-2

The work to be done under this Contract shall consist of manufacturing, furnishing and delivering to structure sites prestressed concrete girders, slab assemblies for types A, B, C, D, E, F, G and H bearings including preformed fabric pads, bronze bearing plates, steel base plates, and anchor bolts, and preformed fabric pads for types E, K and L bearings for sixty-nine (69) bridge superstructures.

Structure sites are shown on the Structure Location Plan and are situated at streams between Belvidere, Illinois and Chicago, Illinois, in Design Sections N-2 and N-3 of the North Illinois Route and between Chicago, Illinois, and the Wisconsin-Illinois State boundary, in Design Sections T-5, T-10, T-11, T-12 and T-13 of the Tri-State Route, all sections being portions of the Northern Illinois Toll Highway.

**The approximate quantities of prestressed concrete bridge girders and prestressing strand required for the work are as follows:**

#### PRESTRESSED CONCRETE GIRDERS

| | |
|---|---|
| 36" | 42,000 lineal feet |
| 36" x 28" | 23,500 lineal feet |
| 36" x 21" | 89,500 lineal feet |

#### PRESTRESSING STRAND

| | |
|---|---|
| 7-16 diameter | 5,021,000 lineal feet |

## THE ILLINOIS STATE TOLL HIGHWAY COMMISSION

**20 N. Wacker Dr., Chicago** — **By Austin L. Wyman, Chairman**

Write, wire or phone for detailed information and necessary forms, Chief Engineer, Room 1654, 20 N. Wacker Dr., Chicago 6, Ill. Telephone FRanklin 2-7020.

Previously advertised bids for Contracts E-2A and N-3B will be opened February 14, 1957.

Eng. Extender Constr. Co.
$182,891

Calhoun County Constr. Co.
$227,415

R. P. Devine
$178,700

Geo. Harrison & Son
$74,624

La Crosse Bridging Corp.
$847,995

McDougall-Hartman Co.
$172,823

Peters-Thompson Constr. Co.
LB $120,515

Sheppard Eng. Co.
$958,147

A. J. Walker Constr. Co.
$101,491

Wetzel Constr. Co.
$89,550

▲ ILLINOIS

W. J. Sheppard Co.
LB $373,603
$110,781

Santucci Constr. Co.
$111,400
$295,229

L. A. Alberico Constr. Co.
$267,275

Peter Baker & Son
$87,226

Berry Constr. Co.
$102,208

M. J. Boyle & Co.
$1,765,495

Calhoun County Const. Co.
LB $202,609

R. W. Dunteman, Irving Park, Bensenville
$106,006

S. J. Groves & Sons Co., 1181 W. Peoria St., Crystal Lake
LB $1,577,119

McCann & Co., Inc.
LB $952,981

McHenry Sand & Gravel, Marengo
LB $182,389

Mt. Carmel & Sand & Gravel, Mt. Carmel
LB $255,380

Madison Constr. Co., Box 222, Edwardsville
LB $270,912

Quad City Const. Co.
LB $243,058

Rein & Dahl, Inc.
LB $264,554

Triangle Constr. Co.
$1,148,577

Wood Elec. Constr. Co.
LB $108,447

† Hardwick Bros. Co.
$220,858

▲ Chas. B. Johnson & Son, Inc.
A $5,415,800

Tomasini
$77,384

MICHIGAN

Jarvis Constr. Co. & E. C. Nolan Co.
A $312,408

▲ MICHIGAN

L. A. Davidson Co.
A $1,612,728

A $1,197,117

Dalton Constr. Co.
Sugden & Sisler, Inc.
A $831,802

Cooke County Co.
A $656,926

Harting Constr. Co.
A $136,692

## BUILDINGS—LB & CA

Leonard H. Krill Co.
$120,000

Robert E. Kayser
LB $124,000

▲ McKee Co.
$5,000,000

▲ Sumner Sollitt Co.
A $2,500,000

▲ Inland Constr. Co.
A $1,000,000

Van Etten Bros. Bldrs., Inc.
A $375,000

▲ James McHugh Constr. Co.
LB $4,963,000

A. N. Hickson Co.
LB $402,316

# WEST OF MISSISSIPPI

## HEAVY CONSTRUCTION—BA

† Ark., Jacksonville, BA 2-13-[illegible] Eng. P. O. Box [illegible], Little Rock. Schedule: storage area (1) total clearing approx. 42 acres (2) clearing and [illegible], dead trees and stumps, 47 acres and (3) rough grading. $120,000. CD 1-23.

Mo., St. Louis, [illegible] SERVICE BLDG., BA 2-13-[illegible] Frank J. McDevitt, Jr., Bd. Pub. Serv., 304 City Hall, 12 Blvd. and Market St. 1 story, 12x62 ft. brick steel and [illegible] service bldg. in Dr. Forest Park. $45,000. Plans deposit $15. Albert Ackerly, 401 City Hall, to arrive. Walter R. Bimel, City Hall, to insp. CD 5-31-55.

† Nebraska, BA 2-15-[illegible] Soil Conservation Service, 134 S. 12th St., Lincoln. 17-NB-67, detention dam, Olson [illegible] Creek, Swedeburg, Saunders Co.

† Tex., Ennis, BA 2-14-[illegible] Soil Conservation Service, 10 Vet. Bank Bldg., Temple. 54-Tx-521, flood water retarding structures with earthen embankments, Sites 19 and 20, Chambers Creek & Trib., Navarro Co. Work includes [illegible] Bids to Clarence E. Gilbert, P. O. Box 117, Temple, engr. CD 10-29-56.

† Missouri, BA 2-20-[illegible] U. S. Eng. P. O. Box 1027, Little Rock, Ark. Schedule: (1) [illegible] Zone 2, Roadwork and [illegible] construction Cape Girardeau Flood Protection Proj., Items 111-A and 111-B, Cape Girardeau, Cive-NG-23-065-57-59. CD 1-18.

† Missouri, BA 2-20-[illegible] U. S. Eng. P. O. Box 867, Little Rock, Ark. Schedule: (1) [illegible] State Hy. 6 (1) grading, excav. to widen existing roadway 12 to 32 ft. (2) gravel, shat or crushed stone surfacing. (3) extending existing [illegible] culverts, Table Rock Reservoir, White River, Barry Co., Cive-NG-23-050-57-42. Under $100,000. CD 1-25.

† Tex., Abilene—FIRE ALARM SYSTEM, BA 2-21-[illegible] Eng., 100 W. Vickery St., Fort Worth, autho-

† Kans., BA [illegible]

† Tex., Laredo, [illegible]

† Iowa, [illegible]

## BUILDINGS—BA

Kan., Mission, [illegible]

Mo., Fulton, [illegible]

Tex., Eagle Pass, [illegible]

Mo., Warrenton, [illegible]

## BUILDINGS—SLC

Tex., Dallas—PLANT, Texas Instruments, Inc., [illegible] $1,000,000. [illegible] & Parker, 2611 Cedar Springs, Dallas. [illegible] & Parker, 228 E. [illegible] Ave., San Antonio. CD 1-9.

Tex., El Paso, LABORATORY, El Paso Natural Gas, P. O. Box 1492, [illegible] research and development laboratory, $1,000,000. [illegible] & Dodge, 4 Yandell Blvd., [illegible]. CD 1-18.

## HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dist. 12[illegible], University Ave., St. Paul.

Minn., O. W. Swanson Constr. Co., 550 [illegible] Ave., St. Paul, Minn. LB $662,868. 8 bidders, c. [illegible] 10.3 mi. between [illegible] and Bemidji, Lac qui Parle Co. LB $946,133. 12 bidders, grade [illegible] between Hutchinson and LeCenter, Le Sueur Co.

Minn., Megarry Brothers, St. Cloud, Minn. LB $489,654. 12 bidders, grav. base, road mix and bit. base [illegible] between Hill City and Jacobson, Aitkin Co. LB $175,222. 14 bidders, grav. base, plant mix and bit. [illegible] between Hill City and Jacobson, Aitkin Co.

Minn.—Brogan Constr. Co., 521 Locust St., Des Moines, Iowa. LB $381,613. 10 bidders, grade 0.14 mi. between West Lake Blvd. and North Ave. in St. Cloud, and Bridge No. 9[illegible] 52-81450 ft. steel beam spans skewed with two 32 ft. divided roadway T.H. 24 over Northern Pacific R.R. tracks in St. Cloud. Bids Jan. 25. CD 1-9.

MINNESOTA—State Hy. Dist. 124, University Ave., St. Paul.

Minn., Megarry Brothers, St. Cloud, Minn. LB $146,777. 11 bidders. Bridge No. 9049, 60-84-66 ft. steel beam spans skewed with 10 ft. roadway overhead T.H. 218 over Northern Pacific R.R. tracks located in Brainerd, Crow Wing Co.

Minn., Madsen Constr. Co., 2110 Nicollet Ave., Minneapolis, Minn. LB $146,856. 10 bidders. Bridge No. 6584, two 75 ft. steel beam spans with 65 over 1.3 mi. [illegible] of Minnesota River, Dakota Co. Bids Jan. 25. CD 1-9.

▲† Foley Bros., Inc., New York Bldg., St. Paul, Minn. LB $1,732,238. Structures consist of [illegible] & W. [illegible] 5 [illegible] [illegible] Elem. 5 [illegible] [illegible] 1 [illegible] [illegible] BAUDETTE, MINN. [illegible] Eng., 1217 [illegible] Post Office and Custom House, St. Paul, Minn. Bids Jan. 24. CD 1-3.

IOWA—State Hy. Comm., Ames.

I. A., Fort Dodge Limestone Co., Fort Dodge, Iowa. CA $75,323. [illegible] 2,608 ft. [illegible] 1276 ft. [illegible] 1322 ft.

▲ MISSOURI—State Hy. Dir., Jefferson City.

Stupp Bros. Bridge & Iron Co., P. O. Box 24, LeMay Station, St. Louis, Mo. LB $3,277,164. 11 bidders. [illegible] steel [illegible] steel [illegible] 5 [illegible] [illegible] [illegible]

# DURAJOINT®

## Polyvinylchloride=PVC WATERSTOPS

## ADVANTAGES

- **Resistant to extreme waterhead pressures**
- **Tensile strength of not less than 1900 lbs. per square inch**
- **Superior holding strength ... elongation ability of more than 350%**
- **Effective temperature range of —54°F. to +176°F.**
- **Chemically inert ... resistant to acids, alkalis, weather, chlorinated water, oil, fungus, etc.**
- **Quickly, easily spliced "on-the-job" by merely applying heat and holding ends together ... requires no welding or vulcanizing equipment**
- **Available in a type and size to meet the requirements of any particular climatic condition and head of water**
- **Supplied in lightweight, easy to handle 50 ft. coils ... withstands abuse without damage**

Have you compared "DURAJOINT" with your present waterstop materials? If so, you have already found out that *only* "DURAJOINT" offers *all* of the following important features:

BEST MATERIAL ... "DURAJOINT" is extruded from a specially compounded polyvinylchloride (thermo-plastic) material that will outlast the useful life of the structure it's used in.

BEST DESIGN ... "DURAJOINT'S" special longitudinal ridges insure the distribution of critical pressures and enhance the holding power. The hollow center bulb assists in providing for extreme elongation with full recovery.

STRONGER ... "DURAJOINT'S" extreme elasticity and excellent tear resistance allow it to successfully handle movement of masses of concrete without being sheared.

ECONOMICAL ... "DURAJOINT" may be installed at a substantial savings in material and labor costs over other waterstop materials ... easily installed by unskilled labor.

NATIONALLY DISTRIBUTED!

"DURAJOINT" enjoys national distribution through the outlets of Tecon Products Inc. in the 11 western states and W. R. Meadows, Inc. in the other 37 states of the mid-western, southern and eastern portions of the United States. Write today for complete information and name of your local distributor.

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**TECON PRODUCTS INC.**
304 S. ALASKAN WAY
SEATTLE 4, WASHINGTON

**W. R. MEADOWS, INC.**
16 KIMBALL STREET
ELGIN, ILLINOIS

▲ TEXAS

▲ TEXAS

▲ NEW MEXICO

## BUILDINGS—LB & CA

▲ Stanford Constr. Co. $1,827,000

▲ Bruce Building Co. $20,000,000

▲ A. Borchman & Son $1,730,000

W. C. Myers Constr. Co. $355,000 $345,500 $371,500

## FAR WEST

### HEAVY CONSTRUCTION—BA

### BUILDINGS—BA

### HEAVY CONSTRUCTION—LB & CA

† A. Gladney $144,904

† R. E. Uptegraff Mfg. Co. $61,286

Colonial Constr. Co. $90,260

▲† J. G. Watts Co. $1,397,155

† Power Line Erectors $236,570

Kay Constr. Co. $405,392

OREGON
Central Paving Co. $491,399

▲ OREGON
Kuckenberg Constr. Co. $1,039,843

Roy L. Houck & Son $560,153

Calkins Crushing Co. $289,225

Vernon Jarl $183,545

Central Paving Co. $462,550

OREGON

OREGON

† Charles C. Stewart Machine Co., Inc. $50,580

Thomas Constr. Co. $458,355

▲ CALIFORNIA
Cox Bros. Constr. Co. and J. E. Haddock Ltd. $2,254,719

K. E. C. Co., Inc. $85,084

▲ CALIFORNIA
Fredrickson & Watson Constr. Co. $3,144,444

† Baldwin Constr. Co., Inc., and H. Earl Parker, Inc. $2,400,697

▲ CALIFORNIA
Ben C. Gerwick, Inc., and J. H. Pomeroy & Co., Inc.

309,498

▲ CALIFORNIA

John Delphia & Fred J. Early Jr. Co., Inc., P.O. Box 607, Patterson, Calif., let $1,077,777 ... bidders grading, surf. ... between ... Ave. and ... Stanislaus ... Bids Jan. 25. CD 1-2

Rogers Constr. Co., 1951 Witherby St., San Diego, Calif., CA $641,697, enlarge Grossmont Reservoir, LA MESA, CALIF. ... Irrigation Dist., 1651 Sidney St., La Mesa, Calif. Bids Dec. 14. CD 12-13, under LB.

George W. Peterson, 12616 Frisbee St., North Hollywood, Calif., CA $778,036, est. $772,000. Arvin-de los Jardines Storm Drain, Bond Issue Proj. ... LOS ANGELES, CALIF., County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Jan. 18. CD 1-2.

E. T. Haas Co., P.O. Box 95, Belmont, Calif., CA $930,458, subdivision improvement, east San Rafael Assessment Dist. 1, Joseph ... Ireland area, paving curbs, sidewalks, storm ... SAN RAFAEL, CALIF., City Clerk. Bids Jan. 7. CD 12-27, under LB.

Robert W. Mongola Co., Box ... Dinuba, Calif., CA $102,948, est. $104,147, (14 bidders) Grove Ave. Trunk Sewer, CA $128,265, est. $139,585, (9 bidders) Arroyo Highway Trunk Sewer, Grove to Lugonia Aves., REDLAND, CALIF., City Council, ... Calif. Bids Jan. 22. CD 1-2.

## BUILDINGS—LB & CA

▲† Arrington Constr. Co., Idaho Falls, Idaho, CA $1,119,280, ... ft. ASSEMBLY TEST BLDG., ... ft. CONTROL and EQUIPMENT BLDG. for Low Power Test Facility at National Reactor Testing Station, Contr. No. AT (10-1)-672, ARCO, IDAHO. Arvin-Edwards Constr. Co., ... Idaho Falls, ... Bids ... CD 1-2-58, under LB.

Teller Constr. Co., 818 N. Lombard St., Portland, Ore., CA $224,476, ... Test Facility at National Reactor Testing Station, Contr. No. AT (10-1)-411, IDAHO. Arvin-Edwards Constr. Co., ... Idaho Falls, Idaho. Bids ... CD 1-28.

C. H. Elle Constr. Co., 990 Yellowstone Ave., Pocatello, Idaho, CA $678,400, DORMITORY, DINING HALL at Idaho State College, ... Hall, 1901 students, POCATELLO, IDAHO. Idaho State College, Pocatello, Idaho. CD 1-2-58.

▲ Quality Builders, P.O. Box 1569, Tacoma, Wash., CA $1,645,158, ... Bids Jan. 22. CD 1-2-58, under LB.

Albert Reingardt, 5520 S. 7th St., Long Beach, Calif., CA $416,700, ... CENTARY SCHOOL, DUARTE, CALIF., School Dist., Duarte, Calif. Bids Jan. 13. CD 1-14.

Williamson Bros., Inc., ... Rd., Pomona, Calif., let $434,000, 9 bidders, Sarahona Ave. ... LOS ANGELES, CALIF., ... Angeles Bd. Educ., 1425 South San Pedro St., Los Angeles, Calif. Bids 1-22. CD 1-22.

# CANADA

## BUILDINGS—BA

Ont., Ottawa, SCIENCE, BA 2-12—Carleton College, 268 First Ave., awarded lot of bidders, 4 story science bldg., on 13-acre site, first of 30 bldgs., $500,000. Bishop, Hefner & Jones, 72 Carlton St., Toronto. CD 11-15-35.

▲ Newfoundland, St. John's, POST OFFICE—BA ... Dept. P. Wks., Hunter Bldg., Ottawa, Ont., post office, $1,000,000. Plans deposit $300. CD 2-3-56.

## HEAVY CONSTRUCTION—LB & CA

▲ Aklavik Constructors, Ltd., comprising Standard Gravel & Surfacing of Canada Ltd., Calgary; C. F. McLaughlan Constr. Ltd., Edmonton; Burns & Dutton Concrete & Constr. Co. Ltd., 9004 125 Ave., Edmonton; and New West Constr. Co. Ltd., 10480 113 St., Edmonton, Alta., Edmonton, Alta., CA Est. $5,000,000, 30 mi. spur line from Thicket Portage on CNR Churchill line, to the International Nickel mining proj. at Mystery-Moak Lake area, MANITOBA. Canadian National Rys. A. V. Johnson, ch. engr., 355-360 McGill St., Montreal, Que. Awarded Jan. 21. CD 12-7.

Lucas Constr. Co., Regina and Saskatoon, Sask., CA Approx. $300,000-$500,000, constr. approx. 14 mi. highway subgrade from Mile 256 on Hudson Bay Ry. to hydro site at Grand Rapids, Myster Lake, Moak Lake area, MANITOBA. Manitoba Hydro-electric Power Board, Electric Ry. Chambers, Winnipeg, Man. Awarded Jan. 23. CD 12-7.

ONTARIO—Dept. Hys., Parliament Bldgs., Toronto.
K. J. Beamish Constr. Co. Ltd., Box 189, Thornhill, Ont., LB $336,209, 13 bidders) structure, grading and culverts 2.4 mi. Hy. 401, from Hy. 27 west of Etobicoke Creek and Etobicoke Twp., Cont. No. 202. Bids Jan. 23. CD 12-17.

ONTARIO—Dept. Hys., Parliament Bldgs., Toronto.
Cart Paving Co. Ltd., 419 Cherry St., Toronto, Ont., LB $957,473, (5 bidders) granular base, concrete paving 4.93 mi. Hy. 401, Windsor entrance from Hy. 98 to Hy. 3 and Hy. 2B, Contr. No. 56-207, Windsor. Bids Jan. 24. CD 1-7.

ONTARIO—Dept. Hys., Parliament Bldgs., Toronto.
Hacquoil's, ... Bridge Co., Ltd., Canada Hy. 17, ... Kakabeka ... Kakabeka ... Bids ... CD 12-8-56.

R. A. Blyth, 7 St. Andrews Gardens, Toronto, Ont., CA $457,957, (6 bidders) const. roads, bridges in county of ... dam proj., Conestoga River, 20 mi. northwest of ... residence, Glen Allan, BRANTFORD, ONT., Grand River Conservation Comm., Box 605, Brantford, Ont. Bids ... Awarded Jan. 21. CD 11-9.

Canadian Comstock Co. Ltd., 206 Laird Dr., Leaside, Toronto, Ont., LB $193,000, (5 bidders) supply and install an 27.6 kv primary and 4.16Y volt secondary ... H-frame steel tower structures, transformers, foundations, etc. at Eglinton Pumping Station, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Jan. 21. CD 12-18.

Canada Electric Co. Ltd., 2451 Danforth Ave., Toronto, Ont., LB $110,479, (5 bidders) supply, install outdoor 27.6 kv substation, 2,300 volt indoor switching equip., service transformers and misc. equip. and appurtenances, Royal York Pumping Station, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Jan. 21. CD 12-18.

Grant Contg. Co. Ltd., 26 Queen St. E., Toronto, Ont., LB $301,600, (7 bidders) 16 in. watermain from Stewart Ave. and Bridletty St. to Clyde ... Wilson Ave., TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont.

Sam Corentino, Ltd., 80 Hymus Rd., Toronto, Ont., LB $284,000, (7 bidders) 16 in. watermain from reservoir site at Caledonia Rd. and Lawrence Ave. west to Northgate Dr. and Wilson Ave., TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Jan. 21. CD 1-2.

Black & McDonald, Ltd., 101 Parliament St., Toronto, Ont., LB $116,950, supply and install outdoor 27.6 kv substation, 2,100 volt indoor switching equip., service transformers and misc. equip. and appurtenances, Armour Heights Pumping Station, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Jan. 21. CD 12-28.

## BUILDINGS—LB & CA

▲ Claydon Co. Ltd., 290 Carry St., Winnipeg, Man., CA $1,200,000, (10 bidders) 2 and 3 story, approx. 500 sq. ft. ... COMPLEX OFFICE, WINNIPEG, MAN., Manitoba Hydro-Electric Bd. and City of Winnipeg Hydro-Electric Co., Electric Ry. Chambers, Winnipeg, Man. Bids Dec. 29. awarded Jan. 18.

▲ J. L. Guay & Frere Ltee., ... Notre Dame Rd., Montreal, Que., CA Est. $4,000,000, (8 Bidders) ... ft. HOSPITAL and ACADEMIC ... wing, 2 to 5 stories, approx. 30x350 ft., all connected ... with tunnel, concrete fdns., steel frame, ... brick and stone exterior, HALIFAX, N. S. Sisters of Charity, Mount St. Stephen's, N. B. Bids Dec. 14. awarded Jan. 18. CD 11-23.

W. H. Cooper Constr. Co. Ltd., 21 Hunter St. E., Hamilton, Ont., CA Est. $380,000, (5 bidders) 2 story, part basement, 147x200 ft. L-shaped structural steel frame, LABORATORY, HAMILTON, ONT. The Steel Co. of Canada Ltd., Wilcox St., Hamilton, Ont. Bids Jan. 8. Awarded Jan. 21. CD 12-20.

▲ Foundation Co. of Canada, Ltd., 1220 Bay St., Toronto, Ont., CA Est. $5,000,000, PLANT expansion near Jane and Trethewey Dr., TORONTO, ONT. Dominion Bridge Co., Ltd., 3159 Shaw St., Toronto, Ont. Awarded Jan. 18. CD 7-28-52.

Arthur J. Lennox Contractors Ltd., ... Toronto, Ont., CA Est. $425,000, 1 story, 207x320 ft. PLANT, 2 story, 48x124 ft. OFFICE, with steel frame, masonry constr., poured concrete fdns., Castlefield Ave. and Caledonia Rd., TORONTO, ONT. R. B. Haynes & Co. Ltd., 7 Front St. E., Toronto, Ont., Fisher & Tedman, 623 Sherbourne St., Toronto, Ont., Archts. Awarded Jan. 18.

# ALASKA

## BUILDINGS—BA

† Alaska, Sitka—RESIDENCES—BA 3-7, Sitka Tribe Bay National Monument, Sitka, 2 one story, 24x48 ft. frame residences for employees' quarters, Baranof Cove. Extended date. CD 11-12.

## HEAVY CONSTRUCTION—LB & CA

▲† Raber & Kief B-E-C-K Constructors, 420 Queen Anne Ave., Seattle, Wash., LB $4,488,000, (6 bidders) constr. facilities, Naval Station, Contr. NBy 2423, ADAK, ALASKA. P. Wks. Officer, 17 Naval Dist., Kodiak, Alaska. Bids Jan. 22. CD 12/19.

# LATIN AMERICA

## HEAVY CONSTRUCTION—BA

▲ Argentina—CRUDE LINES, etc.—BA 3-29, Yacimientos Petroliferos Fiscales (govt. Oil Agency), Buenos Aires, 937 mi. crude line, Campo Duran to San Lorenzo, $24,000,000; 1,056 mi. natural gas line, Campo Duran to Buenos Aires, $46,000,000; 497 mi. crude line Mendoza to Buenos Aires, $19,000,000. CD 12-6.

# PROPOSED PROJECTS

## WATER SUPPLY

Conn., Waterbury, City Bd. P. Wks., Waterbury, enlarge water supply sys., enlarge Shepaug Reservoir, pipe line from Shepaug Reservoir to Waterbury, intake field, towers, Waterbury, Bethlehem, Woodbury, Watertown, $900,000. Henry C. Whitlock, ... engr.


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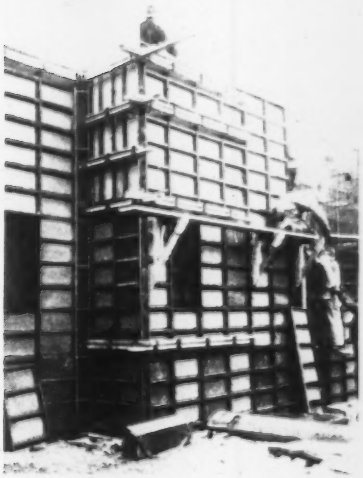

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▲ Mo., St. Louis County ... $4,000,000-$5,000,000. To go ahead in 1957.

▲ O., Akron ... $1,000,000.

Pa., Jackson Twp. ... $400,000.

Pa., Phoenixville ... $400,000.

Alta., Boyle ... $125,000.

Alta., Vegreville ... $325,000.

## SEWERS, WASTE DISPOSAL

▲ Ariz., Tucalcon ... $3,000,000.

Ark., Little Rock ... $150,000.

▲ Calif., Los Angeles ... $1,358,700.

▲ Colo., Englewood ... $3,000,000. CD 5-15.

▲ Conn., Waterbury ... $1,000,000.

Mich., Marietta ... $385,000. CD 7-17-57.

Mich., Pontiac ... $800,000.

Minn., Alden ... $253,000.

Minn., Blooming Prairie ... $209,000.

Minn., Byron ... $125,000.

Minn., Round Lake ... $173,000.

Mo., Higginsville ... $557,000.

▲ N. J., Somerville ... $3,000,000-$3,500,000.

▲ Tenn., Memphis ... $1,141,500.

▲ Wash., Bellevue ... $1,400,000.

Wash., Seattle ... $108,314.

## BRIDGES

Ill., Rockford ... $350,000.
$375,000.

WASHINGTON
Pierce Co. ... $79,200.
$147,000.

WASHINGTON
Snohomish Co. ... $300,000.

Whatcom Co. ... $117,000.

## STREETS AND ROADS

Conn., Middletown ... $125,000.

MASSACHUSETTS
Boston ... $430,000.
$85,000.
$290,000.
$150,000.
$73,000.
$90,000.
Fitchburg ... $120,000.
Worcester ... $170,000.
$182,000.

MASSACHUSETTS
Cambridge ... $120,000.
Chicopee ... $80,000.
Fall River ... $170,800.
Lawrence ... $100,000.
$142,000.
Lynn ... $80,000.
Northampton ... $100,000.
Springfield ... $100,000.
Waltham ... $80,000.

Mich., Pontiac ... $750,000.

Minn., Minneapolis ... $260,000.

O., Cincinnati ... $100,000.

Tex., Crockett ... $100,000.

Tex., Houston ... $150,000.

Tex., Jacksboro ... $105,000.

Tex., Kountze ... $239,400.

Tex., Odessa ... $171,115.

Tex., Richmond ... $475,000.

Tex., Seminole ... $215,000.

▲ WASHINGTON
Island Co. ... $439,000.
Skagit Co. ... $667,000.
$1,219,450.
$157,600.
Snohomish Co. ... $115,000.
$217,250.
$144,500.
$248,000.
$628,000.
$348,000.
$350,000.
$200,000.
Whatcom Co. ... $217,250.
$144,500.
$157,600.

▲ WASHINGTON
King Co. ... $285,000.
$535,000.
$1,350,000.
$364,000.
Pierce Co. ... $122,500.
$455,000.
Wash., Tacoma ... $110,000.
$115,000.

## EARTHWORK, WATERWAYS

▲ Wis., Madison ... $1,000,000.

## AIRPORTS

† Me., Bangor ... $500,000.

† N. J., Wrightstown ... $500,000.

† N. Y., Niagara Falls ... $1,000,000-$3,000,000. CD 12-1.

Wis., Eau Claire ... $125,000.

## LATIN AMERICA

▲ Mexico, Mexico City ... $1,600,000.

▲ Mexico, Puerto Vallarta ... $1,000,000.

▲ Mexico, Zihuatanejo ... $1,000,000.

## PUBLIC BUILDINGS

▲ Ark., Hot Springs ... $1,729,000.

▲ Calif., Coalinga ... $2,604,000.

▲ Calif., Burlingame ... $3,950,000.

▲ Calif., Indio ... $1,250,000.

▲ Calif., Los Angeles ... $15,000,000.
$1,110,000.
$1,200,000.

▲ Colo., Colorado Springs ... $725,000. CD 12-20.

▲ Colo., Delta ... $2,215,000.

Conn., Bridgeport ... $345,000.

▲ Conn., Hartford ... $4,500,000. CD 12-11.

▲ Conn., New Britain ... $1,462,500. CD 1-11-19.

▲ Conn., Newington ...

Hartford, Junior High School, $1,625,000. Clarence & Wright, 1107 Asylum Ave., West Hartford, consult. engrs. CD 4-29.

▲ Conn., New London—AGGREAT Rx Dist. P. Wks. Office, Third Water Dist., federal (PWA) funds, No Church St., New York, N.Y., plans by Douglas Orr, 211 Whitney Ave., New Haven, 4 story masonry, concrete laboratory, at Shade Arthur Sound Laboratory, Fort Trumbull, $4,000,000. CD 12-19.

Conn., Newtown—HOSPITAL—State P. Wks. Dist., 165 Capitol Ave., Hartford, Fairfield State Hospital addn., $373,970.

▲ Conn., Rocky Hill—HOME, etc.—State P. Wks. Dist., 165 Capitol Ave., Hartford, Veterans' Home and Hospital addn., $1,225,239.

▲ Conn., Southbury—PATIENT FACILITIES, etc.—State P. Wks. Dist., 165 Capitol Ave., Hartford, addn. patient facilities, $2,000,000. Contractor will purchase stock, sold storage furniture, $138,434. Southbury State Training School. CD 2-7-49.

▲ Conn., Storrs—MEDICAL-DENTAL SCHOOL—State P. Wks. Dist., 165 Capitol Ave., Hartford, medical and dental school at University of Conn., $1,500,000. CD 2-26.

▲ Ga., Marietta—SCHOOLS—Cobb County School Bd., Marietta, voted $1,750,000 bonds Jan. 9; schools. CD 12-5.

Ill., Antioch—SCHOOL—School Dist. 34, 817 Main St., plans by Gilbert A. Johnson, American National Bank Bldg., Rockford, grade school, Loon Lake and Deep Lake Rds., $394,000.

Ill., Glen Ellyn—GYMNASIUM—School Dist. No. 7, 470 Crescent St., plans by Clarence Jensen, 15 E. Northwest Hwy., Park Ridge, Illinois, Glenbard High School, 670 Crescent St., $878,000.

▲ Ill., Wilmette—SCHOOL, etc.—School Dist. 39, 738 10th St., plans by Schaefer & Hemmingson, 222 Washington St., Waukegan, elementary school, gymnasium and additions, between Locust and Ridgeland Rds., $1,250,000.

Ind., South Bend—SCHOOL—School, City of South Bend, 226 S. St. Joseph St., plans by Andrew A. Toth, 2158 Portage Ave., 2 story, 191x243 ft., masonry, structural steel, Thomas A. Edison Elementary school, $530,000. Bevington Tippett & Rockey, K. of P. Bldg., Indianapolis, consult. engrs. CD 9-27.

▲ La., Lake Charles—HOSPITAL—State Hospital Bd., Jesse Bankston, State Capitol, Baton Rouge, plans by Dunn & Gaenslen, 1732 Ryan St., Lake Charles, charity hospital, $2,000,000.

Mass., North Andover—SCHOOL—Town School Bldg. Comm., plans by Adden, Parker, Dixon & Cronin, 177 State St., Boston, elementary school, southeast of Andover St. and northeast of Roseland Ave., $500,000. Constr. in 1957.

▲ Mich., Grand Rapids—LIBRARY—City, Greater Grand Rapids Public Library Comm., Grand Rapids, library, $1,235,000.

Minn., Pine Bend (P. O. St. Paul)—SCHOOL—Ind. Educ. Independent Dist. No. 1, Inver Grove, St. Paul Rte. 12, South St. Paul, plans by Ellerbe & Co., E. 695 First National Bank Bldg., St. Paul, elementary school, $350,000. To be opened in 1957.

▲ Minn., St. Paul—HOSPITAL—City of St. Paul, Joint Ramsey, St. Paul Association for Crippled Children Hospital Comm., c/o Engineering Department, Miller Hospital, near Stinson and St. Joseph's Hospital, probably in area enclosed by Ayd Mill Rd., Main and North Sts., $12,000,000.

Mo., King City—SCHOOL—School Dist. R-1, Sullivan Schools, voted $500,000 bonds, high school, grade school addn.

▲ Mo., University City (St. Louis 5, P. O.)—SCHOOL—School Dist. of University City, Bd. Educ., Dr. Robert L. Gutterman, Supt. Schools, 6701 Delmar Blvd., Zone 5, $2,200,000 bond issue to Aug. 2, schools, school addns., impvts. CD 12-19.

▲ N. J., Neptune—SCHOOL—Bd. Educ., plans by Victor Rothfeld, 17 Cooper Sq., Room 4 & Rothfeld, 125 E. 46th St., New York, N.Y., high school, $3,000,000. Work to start in summer 1957. CD 8-21.

N. J., Trenton—HOSPITAL—N. J. Div. Purchase & Property, State House, Trenton, plans by Keally & Gruzen, 744 Broad St., Newark, 2-room State Hospital extn., $344,000.

▲ N. J., Westfield—SCHOOL—Bd. Educ., plans by Frederick A. Klaasser, 2013 Stone Ave., Union, High School known as Thomas A. Edison, $1,850,000.

▲ N. Y., Amherst—SCHOOL—Sweet Home Central School Dist. No. 7, 663 Sweet Home Rd., Eggertsville, voted bonds Dec. 14, Junior-Senior High School on Sweet Home Rd. and elementary, Rd., $2,800,000.

▲ N. Y., Buffalo—OFFICE and STORAGE—City, Dist. Pub. Wks., Water Supply, Room 1, City Hall, Engineer of Surveys, St. Room 3, and storage Bldg. for Water Division, $596,131.

▲ N. Y., Buffalo—INDUSTRIAL AND FINE ARTS—University of New York, State Education Bldg., Albany, plans by James W. Kideney & Assocs., Ellicott Square, Industrial and fine arts bldg., Buffalo State Teachers College, $3,750,000. CD 12-15-55.

▲ N. Y., Lawrence—SCHOOL—Union Free School Dist. No. 15, Lawrence, Senior High School, site, Cedarhurst Stadium, $5,439,750. Referendum vote to be held Feb. 13.

▲ O., Kettering—AUDITORIUM-ADMINISTRATION—Bd. Educ., Kettering, plans by Ralf T. Pannell, Kettering Bldg., Dayton, auditorium-administration bldg., Fairmount High School, $3,243,960.

▲ O., Marlboro—HIGH SCHOOL—Marlington School Dist., high school, bond election May 7, high school, $1,140,000. CD 11-12.

▲ O., Massillon—HIGH SCHOOL—Tuslaw Dist. Bd. Educ., Zoarville, bond election May 7, high school serving Tuscarawas and Lawrence Twps., $1,021,000.

▲ O., Mineral Ridge—SCHOOLS—Weathersfield Twp. Bd. Educ., Mineral Ridge, bond election Mar. 26, 2 elementary schools, Niles-Carver Rd., Mineral Ridge High School and Evansville elementary schools addns., $1,100,000.

Okla., Seminole—GYMNASIUM—Bd. Educ., Seminole, plans by Hudgins, Thompson & Ball, 1411 Classen Blvd., Oklahoma City, gymnasium for Seminole High School, $400,000.

▲ Tex., Beaumont—HIGH SCHOOL—Beaumont Independent School Dist., Beaumont, plans by George L. Ingram, architect-engr., 690 Rogers St., Plus Lamar District High School, $1,000,000. Orlando Bain & Wm. Brooks, 812 N. Anderson St., Beaumont, consult. engrs. CD 12-15-55.

▲ Tex., Huntsville—APARTMENT HOUSING, etc.—Sam Houston State College, Huntsville, 3 story apartment housing, 2 apartments, $400,000. No. 1 dormitory, 96 men, $350,000. No. 2 dormitory, 96 men, $350,000; No. 3 dormitory, $350,000. No. 4 dormitory, 96 men, $350,000. About 2-year program.

Wash., Chehalis—DINING HALL—State Dept. P. Institutions, dining and cooking hall at Green Hill School for Boys, $694,000. Work may start this year. CD 12-1-53.

Wash., Medical Lake—OCCUPATIONAL THERAPY—State Dept. P. Institutions, Olympia, occupational therapy bldg. at Eastern State Hospital, $378,000. Work may start this year.

Wash., Monroe—POWERHOUSE—State Dept. P. Institutions, powerhouse at reformatory, $460,000. Work may start this year.

Wash., Sedro Woolley—WOMEN'S OCCUPATIONAL—State Dept. P. Institutions, Olympia, occupational therapy bldg. at Northern State Hospital, $361,000. Work may start this year.

▲ Wis., Madison—ADDITIONS—City, City Hall, plans by Frank J. Lloyd Wright, Taliesin, Spring Green, $4,000,000. CD 1-28-54.

▲ Wis., Milwaukee—SCHOOL—Bd. School Directors, 1320 N. 10th St., Zone 3, Pulaski High School, N. 1st and W. Center St., $2,500,000. Constr. 1957.

▲ Alta., Edmonton—SCHOOL—Edmonton Public School Dist., high school, plans by Blakey, Blakey & Archibald, 10044 108th St., Edmonton, high school, playing fields, $2,500,000.

▲ Sask., Saskatoon—COURT HOUSE—Dist. P. Wks., Regina, plans by Webster & Gilbert, 212-213 CPR Bldg., Regina, 2 story, 112x112 ft. reinforced court house, $1,000,000. CD 7-19-55.

## COMMERCIAL BUILDINGS

▲ Ala., Birmingham—POWER BLDG.—Alabama Power Co., 600 N. 18 St., plans by Van Keuren, Dyer & Co., 3004 7th Ave., Power Co. Bldg. addn., $1,500,000. Don Summers, c/o owner, architectural consult. Constr. 1957. CD 7-8-55.

Ala., Birmingham—OFFICE—Employers Insurance Co., 2112 1st Ave. N., plans by Wilmot Douglas, 2922 7th Ave. S., 4 story office bldg., U. S. 31, S., about 3½ mi. S. of Vestavia and 7 mi. S. of here, $500,000. Start late summer or fall.

Ala., Birmingham—STORE—South Jefferson Co., 2112 1st Ave. N., plans by Wilmot Douglas, 2922 7th Ave. S., shopping center in new development on U. S. 31, S., near Vestavia and here, $750,000.

Ala., Mountain Brook—OFFICE—Kessler Cullman Ltd., 2324 6 Ave. N., Birmingham, plans by Heery, Smith & Nelson, 1st Nat'l Bank Bldg., Birmingham, 32,000 sq. ft., reinforced concrete, air conditioned, Office Park, $420,000.

▲ Ala., Tuscaloosa—Y.M.C.A.—Y.M.C.A. Bldg. Corp., Chester A. Allen, Pres., 217 Florida Ave., Central Branch Y.M.C.A. Bldg., $800,000. Bldg. Committee Y.M.C.A. Branch, Inc., Supervision, $350,000.

▲ Ala., Tuskegee—DORMITORY—Tuskegee Institute, Tuskegee, plans by Fry & Ely, 15 E. 26 St., New York, N.Y., $2,000,000.

▲ Calif., Los Angeles—OFFICE—Kenneth Norris, owner, 4447 W. Slauson Blvd., plans by Charles & Ellsworth Cole, 3731 Wilshire Blvd., 2 story & basement, 154x151 ft., site W. Slauson Blvd., $1,000,000. S. P. Eames, 223 Bryant, Rialto, consult. engr.

▲ Conn., East Hartford—HOUSES—Dunn F. Hallaway, Long Ridge Rd., 166 houses, Long Ridge Rd., $1,475,000.

Conn., Gilford—MONASTERY—Our Lady of Grace Monastery, Race Hill Rd., plans by Pulda & Sullivan, 1447 Chapel St., New Haven, monastery, $500,000. Arthur G. Bradley, Assocs., 2448 Whitney Ave., Hamden, engrs., CD 4-9.

▲ Conn., Stamford—HOUSES—Dunn F. Hallaway, Long Ridge Rd., 166 houses, Long Ridge Rd., $1,660,000.

Conn., Stamford—REHABILITATION CENTER UNIT—Rehabilitation Center for Physically Handicapped, Inc., 76 Wall St., plans by Sherwood, Mills & Smith, 65 Broad St., second unit rehabilitation center, Palmer's Hill Rd., $345,000. Werner Jensen, Assocs., 641 Summer St., consult. engrs.

Del., Claymont—ACADEMY—Archmere Academy, 20 Manor Ave., plans by J. George McDermott, 130-7 Washington St., Wilmington, residence bldg., $600,000. Bids in spring.

▲ Ill., Chicago—APARTMENT—S. D. Bds., 110 S. Dearborn St., plans by Building Research & Development, 211 E. Ontario St., 17 story, 122 unit apartment, 4757 Sheridan Rd., $2,300,000.

▲ Ill., Chicago—APARTMENT—Leo Solomon & Arthur Heide, c/o Irving Kaplan, Archt., 203 N. Wilson Ave., 210 unit apartment, 6301 Sheridan Rd., $5,800,000. CD 12-31.

▲ Ill., Chicago—APARTMENT—Ben & Sam Levin, 33 N. Lasalle St., plans by Irving Kaplan, 203 N. Wilson Ave., 22 story, 248 unit brick apartment, 6117 Sheridan Rd., $4,400,000.

Ill., Chicago—APARTMENT—Rene Wank, 410 N. Michigan Ave., plans by Ernest M. Harder, 6410 N. Fairfield Ave., 3 story, 38-unit brick apartment, 2018 Farwell Ave., $675,000.

▲ Ill., Joliet—HOSPITAL—Sisters of Saint Francis of Assisi Health Corporation, Sisters of Saint Francis of Assisi Health, plans by Fowler, Cooper, Bennett, Hall & Fowler, 1 E. Wacker Dr., Chicago, Fowler Bldg., 4 story, 100 bed hospital addn., Silver Cross Hospital, Silver Cross Rd. & Jefferson Rd., N. Jefferson, Springfield and Glenwood, $4,300,000. CD 4-12.

Ky., Danville—SHOPPING CENTER—Owner c/o James H. Stites, developer, Harding St., 1 story, 190x440 ft., brick, concrete block shopping center, 20 units, $400,000.

▲ Ky., Louisville—BANK—Hart, Hart & Trabue, East and Stoner Bldg., plans by Walter Wagner & Jos. H. Hunt, 1st Federal Bldg., 4 story addn. to rear of bank, 416 W. Jefferson St., $1,000,000. CD 8-18-55.

▲ Me., Bangor—HOUSING—Bangor Housing Office, Dow Air Force Base, plans by Alonzo J. Harriman, Inc., 242 Court St., Auburn, construct and house housing, 400 units, Dow Air Force Base, $10,000,000. Bids in March. CD 2-7-56.

Mass., Milton—TEMPLE—Temple Shalom, 150 Blue Hill Ave., plans by David J. Abramson & Assoc., 441 Boylston St., Boston, temple addn., new additions, vestry, etc., $350,000. Constr. in 1957.

▲ Miss., Jackson—OFFICE—P. T. Dunbar to own, Milner Bldg., plans by John L. Turner & Associates, 1060 Milner Bldg., 15 story, brick, $5,000,000.

▲ Mo., St. Louis County—HOSPITAL—Sisters of Mercy, c/o Richard G. Mackenzie, Chr. Lay Bd. of Trustees, Mercy Hospital, 607 Lindell Ave., St. Louis, Zone 10, hospital and auxiliary facilities, nurses home, convent, chapel, etc., Ballas Rd., $12,000,000-$14,000,000. Bernard F. Hoffmann, 1015 Locust Ave., Clayton, Zone 5, archt. Constr. in 1958.

Mo., Springfield—CHURCH—Kings Way Methodist Church, Bay Horse Acres, east, Springfield, plans by Richard P. Stahl, 510 S. National St., church addn., chapel, $400,000.

N. H., Exeter—HOSPITAL—Exeter Hospital, Prospect Hill, Exeter, plans by Kendall, Taylor & Co., Inc., 12 Norfolk St., Cambridge, Mass., hospital renovations and 2 addns., $400,000.

N. J., Clifton—RESTAURANT—Frank Alberti, Lexington Ave. & rte. 46, plans by John L. Thon, Trinity Pl., Union City, restaurant, Lexington Ave. between Dawes Ave. and East 6th St., on 3½ acre plot. $500,000.

N. J., Denville—MOVING AND STORAGE—Acme Fireproof Storage Co., Paterson, plans by Eric T. Kiff, 5 Dumont Pl., Morristown, fireproof storage and office building, Diamond Spring Rd., Denville, 4 stories, 200x200 ft., factory, service, utility, executive rooms, etc. $400,000.

N. J., Elizabeth—CHURCH—Diocese of Newark and Parish of Immaculate Conception Church, 427 Union Ave., plans by Joseph Mitchell, 59 Second St., South Orange, church bldg. to have capacity of 850, adjoining rectory, 1 Union Ave. $450,000. Contract awarded September 1958.

▲ N. J., Fort Monmouth—HOUSING—U. S. Eng., 11 E. 41 St., New York, N. Y., plans by Lyman Hewlett, 551 Ave. of the Americas, N. Y., and Kessler, Cushman & Irving, 1501 Broadway, N. Y., 1,000 units. $1,000,000-$3,000,000. Bids on or about June 13.

▲ N. J., Newark—HOSPITAL—St. James Hospital, 142 Old St. and 51 E. Anthony De Pace, 121 West 46th St., New York 36, N. Y., hospital. $3,000,000.

▲ N. J., New Brunswick—CLASSROOM BLDG., etc.—Rutgers University, Hoes Lane, Piscataway, office bldg., $1,500,000; library bldg. for Douglas College, women's college of University, $1,250,000; biological sciences bldg., $2,500,000. CD 3/8/54.

N. J., Trenton—CHURCH—First Methodist Church, 15 S. Broad St. and 214 Parkside Ave., church. $350,000.

▲ N. J., Verona—STORE—J. M. Towne & Co., 490 Bloomfield Ave., Caldwell, 150,000 sq. ft. store, Bloomfield Ave., parking for 1,500 cars. $1,000,000.

N. Y., Lancaster—SCHOOL—St. Mary of Assumption Church, Lancaster, plans by Foit & Bastdmagel, 250 Delaware Ave., Buffalo, elementary school addn. $400,000. Work to start in March.

▲ N. Y., New York—OFFICE, etc.—Daniel Reilly Corp., 24 Fifth Ave., plans by Charles N. & Seely Whinston, Grand Central Terminal Bldg., Zone 17, 17 story office, showroom and storage bldg., 1435-49 Broadway and 143-47 W. 40 St. $2,000,000.

▲ N. Y., New York—OFFICE—Syndicate, c/o Abraham Marinoff, 793 Madison Ave., Zone 21, plans by Irwin Palmer, 624 Madison Ave., Zone 22, 18 story air-conditioned office, Broad St. from Pearl to Stone Sts. $2,500,000.

N. Y., White Plains—HOTEL—Hotel Associates, c/o William B. Tabler, archt., 401 Seventh Ave., New York, Zone 1, hotel at Mamaroneck Ave. and Hutchinson River Parkway, $500,000. Seelye, Value, Stevenson & Knecht, 101 Park Ave., New York, Zone 17, consult. engrs.

O., Beechwood Village—APARTMENTS—L. M. Gunderson, 13124 Shaker Square, Cleveland, Zone 20, O., plans by Geo. Burroughs, Howard, Hinman & Gabriel, 16104 Kinsman Rd., Cleveland, Zone 20, two 4-suite apartments and one 20 suite apartment. $400,000. CD 9/30/55.

O., Dayton—BOWLING ALLEY, etc.—Thomas and Charles Mantia, c/o Gregory C. Katsakatty, Third Natl. Bldg., Dayton, plans by Irving Merdinger, 3664 Karwin Dr., Dayton, bowling alley and 4 stores and cocktail lounge, 4-acre site on Salem Ave. west of Miami Valley Golf Club and parking area. $500,000.

▲ O., Tiffin—HOSPITAL—Bd. Trustees Mercy Hospital, Tiffin, plans by Robert D. Reiley, Jr., Paramount Bldg., Toledo, hospital addn. $1,000,000. CD 3/28.

O., Warrensville Heights—CLUB, etc.—Sidney Hill Suburban Health Club, Holloden Hotel, Cleveland, Zone 14, plans by Hart & Weiss, 12728 Woodland Ave., Cleveland, Zone 20, health club and swimming pool, Northfield Rd., 1½ mi. south Van Aken Blvd. $800,000. Construction to start in May.

O., Youngstown—BOWLING ALLEYS, etc.—George and William Grim, 1130 S. Arlington St. Akron, bowling alleys, and restaurant, between Hazelwood and Schenley Ave. $350,000. Work to start this spring.

Pa., Plymouth Meeting—CHURCH, etc.—R. C. Archdiocese of Phila., 225 N. 18 St., Phila., church and school for Epiphany of Our Lord R. C. Church. $344,000.

▲ Tex., Bay City—HOSPITAL—Gulf Coast Hospital & Research Center, c/o Bay City Business & Professional Women's Club, Bay City, 100-bed hospital. $1,000,000.

▲ Tex., Dallas—HOTEL, etc.—Midwestern Security Life Insurance Co., 408 S. Harwood St., hotel and swimming pool. $750,000; commercial bldg., $750,000, 8 story, 185,750 sq. ft. office. $3,750,000. Dick Corgan, Tower Petroleum Bldg., consult. engr. CD 12/31.

Tex., Houston—MOTEL—Airport Motels, Inc., c/o Walter Shaw, 7246 Homes Rd., Houston, 100-room motel at International Airport. $600,000.

▲ Tex., Houston—OFFICE—Brunot Engineering Co., Inc., 2727 Kingston Blvd., plans by Wilson & Kenneth, 2711 Ferndale St., Houston, office. $1,000,000. Walter P. Moore, 2 Pondrae St., and R. J. Jenkins, 1242 Richmond St., Houston, engrs. CD 1/8.

Tex., Pasadena—CHURCH—First Baptist Church, Fairmont Pkwy. and Crenshaw Rd., Pasadena, addition to present church and parishioner sanctuary. $510,000.

Tex., Pasadena—CHURCH—First Methodist Church, Pasadena, church. $350,000.

Tex., Pasadena—CHURCH—Memorial Baptist Church, Pasadena, church and educational building, 3 auditoriums for Sunday school and services. $360,000.

▲ Tex., San Antonio—APARTMENT, etc.—Don Duryea, Broadway Bldg., 2400 block of 11 private story apartment, swimming pool, golf course, 17-acre tract. $1,750,000.

▲ Wash., Spokane—HOUSING—U. S. Eng., 4735 E. Marginal Way, Seattle 4, plans by McClure & Atkinson, Shelwood Bldg., 240 family housing quarters, Fairchild Air Force Base. $2,250,000. Bids next month. CD 12/28/55.

Wash., Tacoma—CHURCH—Mason Methodist Church, 2721 N. Madison Ave., church. $400,000. Work to start this year.

▲ Wis., Fond du Lac—SHOPPING CENTER—H. Strasburg & Sons Corp., 2025 N. Water Ave., Sheboygan, 3-mi. plans by Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, Minn., shopping center to contain 30 stores. $1,200,000.

Wis., Milwaukee—SOCIETY—Engineers Society of Milwaukee, 3112 W. Highland Ave., plans by Gates, Weiss & Kremer, archt.-engrs., 611 N. Broadway, 2 story, boxed in L-shaped engineers society bldg. addn., remodeling. $375,000.

▲ Alta., Jasper Place—HOUSING—Sutter Developments Co. Ltd., c/o Hidding, Davis & Brown Ltd., consult. engrs., 10514 115 St., Edmonton, 184-unit housing, Winfield area, and Stage II waterworks, sanitary and storm sewer program for housing. $2,000,000.

▲ Que., Granby—SHOPPING CENTER—Maxwell Cummings & Sons, 1340 Sherbrooke St. W., Montreal, project temporarily abandoned, shopping center, Hy. in western city limit. $1,000,000. CD 10/28/55.

Que., Montreal—APARTMENT—D. Zunnenshine, c/o Harry Stillman, archt., 2757 Maplewood Ave., 10 story apartment, Lincoln Ave. and St. Mark St. $350,000.

Que., Three Rivers—HOSPITAL—Rev. Soeurs de la Charite de Providence, 773 Ste. Julie St., plans by Dennoncourt & Dennoncourt, 1240 Royale St., hospital addn. $1,000,000. J. A. M. Langlois & Co., 128 Ruddison St., consult. engrs. CD 1/14.

## INDUSTRIAL BUILDINGS

▲ Ala., Birmingham—FILLING STATION—Colonial Oil Co., E. Bald Ave., Powderly, Birmingham, filling stations in Birmingham area adding to present chain (Dist. for Phillips 66). $1,000,000.

▲ Ala., Gorgas—GENERATING UNIT—Alabama Power Co., 600 N. 18 St., Birmingham, 165,250 kw. Steam Generating Unit No. 9, Gorgas Power Plant. $12,000,000. F. C. Weiss, c/o owner, engr.

Ark., Searcy—PLANT—James H. Matthews & Co., 3942 Forbes St., Pittsburgh, Pa., 25,000 sq. ft. bldg. for metal products plant. $125,000.

Ark., Waldron—PLANT—Indianapolis Glove Co., Waldron, flannel glove mfg. plant. $250,000. Constr. within 6-7 months.

▲ Calif., Sunnyvale—PLANT—Prudential Insurance Co., 764 Broad St., Newark, N. J., manufacturing plant for Lockheed Aircraft Corp., 1745 Victory Blvd., Burbank. $8,000,000.

Ga., Chamblee—SUB-STATION—Ga. Power Co., 52 Fairlie St. N.W., Atlanta, constr. 110,000 volt 18,000 kv.a. unit sub-station to serve Chamblee area 10 mi. north of Atlanta. $728,000. R. N. Benjamin, Ga. Power Co., 52 Fairlie St. N.W., Atlanta, engr.

Ga., Millen—SUB-STATION—Ga. Power Co., 52 Fairlie St. N.W., Atlanta, bldg. 110,000 volt, 20,000 Kilowatt sub-station with connecting transmission lines. $466,000. R. N. Benjamin, Ga. Power Co., 52 Fairlie St., Atlanta, engr.

▲ Ill., Peoria—PLANT—Caterpillar Tractor Co., 600 W. Washington St., East Peoria, plans by Giffels & Vallet, Inc., L. Rossetti Associated Engineers & Architects, 1000 Marquette Bldg., Detroit, Mich., industrial engine plant, plans by Voorhees, Walker, Smith & Smith, 101 Park Ave., New York, N. Y., research facilities. Total est. $5,000,000. CD 1/18.

Ill., Wheeling—FACTORY, etc.—Guardite Corp., 9535 S. Cottage Grove, Chicago, plans by Johnson & Johnson, 111 W. Washington St., Chicago, 1 story, 40,000 sq. ft. brick factory and office bldg. Hints and Wheeling Rds. $350,000.

▲ Ky., Central City—GENERATING STATION—Kentucky Utilities Co., 210 Limestone St., Lexington, generating station. $15,443,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill., consult. engrs.

▲ Ky., Lexington—PLANT, etc.—Dixie Cup Co., 21 St. and Dixie Ave., Easton, Pa., plans by McPherson Co., 404 S. Main St., Greenville, S. C., 150,000 sq. ft. plant and administration bldg., 100,000 sq. ft. storage. $3,000,000.

▲ Md., Hyattsville—WAREHOUSE—Kann's Department Store, Eighth and Market Sts., N. W., Wash., D. C., plans by E. W. Dreyfuss, 1019 15 St. N. W., Wash., D. C., warehouse, Ager Rd. $1,000,000.

▲ Mass., Lexington—INDUSTRIAL DEVELOPMENT—Associated Realty Trust, 131 Newmarket Square, Roxbury, will rent prefabricated industrial development, Rtes. 128 and 2A, 14 acres, $2,000,000; industrial development, 30 acres, Rte. 128 and 2A, Marrett Rd., $3,500,000. (Correction—owner says no such plans. CD 12/26.)

▲ Mich., Kalamazoo—PLANT—Allied Paper Corp., Arnold Marcmont, engr., 1543 Alfred St., Detroit, semi-chemical paper pulp plant. $6,000,000.

N. Y., Utica—PLANT—Kelsey-Hayes Co., 3600 N. Military St., Detroit, Mich., 100,000 sq. ft. plant, facilities for Drop Forge & Tool Div., on 13½ acre site. $900,000.

▲ Okla., Oklahoma City—POWER PLANT—Oklahoma Gas & Electric Co., 321 N. Harvey St., enlarge existing Horse Shoe Lake power plant. $1,000,000. Pioneer Eng. Co., 80 E. Jackson St., Chicago, Ill., consult. engr.

Tex., Houston—WAREHOUSE—Jones Apothecary, Inc., 420 Texas St., warehouse, Gulf Freeway at Dumble St. $100,000.

▲ Tex., Houston—PLANT—Mission Manufacturing Co., 5220 Jensen Dr., mfg. plant for oil field specialty equip.) $2,000,000. Brown & Root, Inc., Box 3, Houston, Tex., consult. engr. CD 4/25.

Wis., Madison—WAREHOUSE—State Dist. Public Instruction, State Office Bldg., 1 story, 80x200 ft. warehouse. $150,000.

▲ Wis., Superior—DISTRIBUTION, etc.—Central Cooperative Wholesale, 1401 Winter St., 1 story distr. bldg. and warehouse. $1,000,000-$1,500,000.

Ont., Toronto—FACTORY, etc.—Steel Art Co., Ltd., 45 Carlaw Ave., plans by S. Devore, 1142 Eglinton Ave. W., part 1 and 2 story, 82x180 ft., steel, brick factory and office. $100,000.

▲ Que., Clermont—MILL—Donahue Brothers, Ltd., 51 Desjardins St., Quebec City, reinf.-con. frame, with tile or asbestos walls sulphite mill addn. (60 tons p/d. capacity). $1,350,000. Stadler, Hunter & Co., 1501 St. Catherine St., Montreal, consult. engrs. CD 4/28/54.

## UNCLASSIFIED

▲ Calif., Long Beach—GAS PLANT—Long Beach Gas Dpt., City Hall, gas plant facilities to be known as Plant No. 6, 150 h.p. compressor, 5,000,000 cu. ft. low pressure holder, 3,000 ft. 20 &n. steel pipe. $1,915,000. M. A. Nishkian, 3754 Long Beach Blvd., consult. engr. CD 12/6/44.

▲ Calif., Santa Monica—PIER-PARK—Los Angeles Turf Club, 258 W. Huntington Dr., Arcadia, Ocean Park Amusement Pier and Park alterations, addns. $5,000,000.

Idaho—RAILROAD TRACK—Northern Pacific Ry., H. R. Peterson, ch. engr., 176 E. 5 St., St. Paul, Minn., build 19 mi. railroad track from Fallon to Moscow. $150,000. To be carried out this year.

Iowa—RURAL DISTRIBUTION LINES—Buchanan County Rural Electric Co-operative, Independence, 38 mi. rural distr. lines; sys. improv., 22 mi. tie lines, Buchanan Co. $525,000. A. W. Grubb, Vinton, consult. engr. CD 1/15.

Kansas—TELEPHONE LINES—Assaria Telephone Exchange, Inc., Assaria, 14 mi. rural telephone lines, rebuilding 50 mi. of existing lines, Kansas 526A, Saline Co. $135,000.

† N. Y., Saratoga—CENTRAL HEATING PLANT—U. S. Eng., 111 E. 16 St., New York, Zone 3, plans by Cowell-Robinson, 25 W. 43 St., New York, Zone 36, central heating plant addn. at A. C. & W. site. $100,000-$500,000.

▲ O., Mount Healthy—RACE TRACK, etc.—Turf Club, Inc., c/o F. Baxter Traction Bldg., Cincinnati, race track, club house, stables. $1,000,000.

▲ Tex., Beaumont—COLISEUM—City, City Hall, Memorial Coliseum (in commemoration of "Babe Zaharias"). $1,000,000.

Wash., Clarkston—SWIMMING POOL—City, City Hall, voted $125,000 bonds Jan. 15, swimming pool. Work starts this summer. CD 1/2.

Wash., Seattle—MOTORBOAT HAVEN—Park Bd., 100 Dexter Ave., plans by L. M. Sherett, Securities Bldg., Zone 4, dredging, piling piers, etc., for motorboat haven at Wetmore Slough. $161,200. Work starts in spring. CD 10/10.

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**Construction Equipment Division**

# Bids—Low Bids—Contracts—Second Section

## NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 18 Connecticut

STREETS AND ROADS

February 18 Connecticut

BUILDINGS—BA

▲ N. H., Portsmouth—HOUSING—BA. On Or About 3.2, Base Procurement Office, Base Theater, Portsmouth Air Force Base, Portsmouth, construct and finance, 1,100 family housing units, Portsmouth Air Force Base, Bids No. 27-604-57-3, $16,200,000. Plans deposit $100. CD 10-12-55.

## MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

March 1 Pennsylvania

STREETS AND ROADS

February 19 New Jersey

▲ Pa., Butler—SCHOOL—BA 2-11—Butler Area Joint School, Butler, 1 and 2 story, 210,000 sq. ft. Senior High School, incl. 8 bldgs. $5,651,300. Plans deposit $50. Howard & Murphy, Butler County National Bank Bldg., Butler, archts. Bids 2-14; rejected. CD 2-6; under LB.

BUILDINGS—BA

▲ N. Y., Plattsburgh—HOUSING—BA 2-14—Base Housing Office, Plattsburgh Air Force Base, construct and finance 1,000 housing units, Armed Services Housing Proj., Contract Div. Invitation 57-10, $27,602,000. Spec. data, Room 5-N, 26 Fifth Ave., New York. Zone 11, archts. CD 1-21.

BUILDINGS—SLC

▲ Pa., Pittsburgh—HOSPITAL—BA 2-5—Children's Hospital, 125 Desoto St., upon bids contract 9 story, reinf. brick block, steel hospital addn., alterations, $4,500,000. Alfred Reed Assoc., Keystone Bldg., archts. CD 1-15; under LB.

HEAVY CONSTRUCTION—LB & CA

▲ NEW YORK—John W. Johnson, Supt. Pub. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany.

N. Y., Hornell Construction Corp., 212 Main St., Hornell, N. Y., LB $757,108, est. $770,000, 2 bidders, widen, reconstr. 2.2 mi. sect. of Rte. 14 from east village line of Bergholt westward through the village to point about 1/4 mi. west of west village line and 0.45 mi. portion of Rte. 244 from Willetts Ave., Geneseo, St. intersection northward to north line, Allegheny Co.

N. Y., East Bay Contracting Co., Inc., New York, N. Y., LB $183,982, est. $200,000, (5 bidders) misc. work paving, drainage, curbing, fencing, lighting, traffic signals, directional signs, water supply and landscaping along 7.43 mi. sect. of Major Deegan Expressway, between 138 St. and Westchester Co. line, Bronx Co.

N. Y., Sheridan Construction Corp., 1580 Sheridan Dr., Buffalo, N. Y., LB $187,284, est. $198,000, (4 bidders) construct 1.18 mi. 4 lane connecting road between Buckhorn Rd. and State Thruway's Niagara Sect., in Buckhorn Island State Park on Grand Island near Buffalo, Erie Co.

N. Y., Lane Construction Corp., 965 East Main St., Meriden, Conn., LB $5,813,377, est. $7,162,000, (7 bidders) construct 7.2 mi. four-lane divided sect. of new Interstate Penn-Canada expressway, sect. of Rte. 11 from an interchange at Kellogg Rd. town of Adams northward to interchange at Arsenal St., Rte. 31 near west city line of Watertown, incl. addnl. 5.24 mi. ramps and 1.55 mi. State Hy. work on Rtes. 3 and 11, incl. railroad grade separation over New York Central R.R. near Kellogg Rd. and four fly overpasses at the Rome State Rd., Massey Rd. and Arsenal St. and Kellogg Rd. interchanges, Jefferson Co.

N. Y., Potter DeWitt Corp., Pavilion, N. Y., LB $647,436, est. $700,000, (5 bidders) reconstr. 5.47 mi. secondary road between Croghan and Indian River and constr. new threespan 180 ft. long bridge over Beaver River, new road which will have a 20 ft. wide bituminous pavement will be on entirely new alignment for about 4 mi. on Croghan end of job, also be put on new location at several other points along route in order to straighten the road, Lewis Co.

N. Y., Weber Construction Co., Inc., 113 Wall St., Schenectady, N. Y., LB $1,447,966, est. $1,486,000, (2 bidders) reconstr. 5.88 mi. sect. of Rte. 5-S with 29 ft. wide concrete pavement, also reconstr. 0.4 mi. sect. of railroad embankment, Montgomery and Schenectady Counties.

N. Y., No bids received 1-31-57, est. $6,520,000, constr. 4.02 sect. of Six Lane divided Penn-Canada Expressway along east side of existing Rte. 11 from Bartell Rd. east of Brewerton northward to Rte. 49 east of Central Square, incl. structures to carry Bartell Rd. over Expressway and to carry the Expressway over Oneida Lake Causeway, the Barge Canal, Swamp Rd. and New York, Ontario and Western R.R., Onondaga and Oswego Counties.

N. Y., James Berardi, 40 Roosevelt Ave., Kingston, N. Y., LB $294,703, est. $340,000 (8 bidders) resurf. 4.06 mi. sect. of Rte. 9 starting just south of Rte. 301 intersection (McKeels Corners) and extend northward to Putnam-Dutchess Co. line, Putnam Co.

N. Y., Frapaul Construction Co., Inc., Rochelle Park, N. J., LB $289,849, est. $317,000 (5 bidders) shoulder paving and misc. constr. work along State Thruway through the Nyacks and Grandview incl. 3.2 mi. on Thruway and 1.52 mi. on various access roads, Rockland Co.

N. Y., Grefe & Brennan, Inc., Rockville Center, N. Y., LB $591,806, est. $742,000 (11 bidders) reconstr. 2.81 mi. sect. of Rtes. 25, 25A and 111 from Jericho Turnpike northeastward to Moriches Rd. in St. James, Suffolk Co.

N. Y., John Arborio, Inc., Poughkeepsie, West Cedar St., Poughkeepsie, N. Y., LB $661,634, Est. $723,000, (2 bidders) reconstr. 1.61 mi. of Rtes. 55 from Rte. 209 just south of village of Kerhonkson eastward to connect with already improved sect. of hy. generally on new alignment, and will have 22 ft. pavement width with 8 ft. shoulders, involve constr. one 3-span 200 ft. bridge over Rondout Creek and two smaller concrete bridges, Ulster Co.

N. Y., R. J. Marshall, Inc., 8 Church St., Wappingers Falls, N. Y., LB $149,469, Est. $156,000, (4 bidders) resurf. 1.67 mi. sect. of Rte. 9 starting at Poughkeepsie-Fishkill town line extend northward to Putnam-Westchester Co. line, Westchester Co.

N. Y., A. E. Ottaviano, Inc., 40 Rose St., Croton-on-Hudson, N. Y., LB $198,821, Est. $220,000, (4 bidders) modification of railroad facilities and relocating of transportation system in Eastchester, N. Y. in connection with State Thruway, 0.85 mi. Westchester Co. line, Bid Jan. 21, CD 12-2.

▲ MARYLAND—State Rds. Comm., 108 E. Lexington St., Baltimore, Zone 2.

Md., Wright Contg. Co., Odenton, Md., LB $4,034,307, (6 bidders) 4.725 mi. Hagerstown By-Pass and connecting roads near Hagerstown, W. 446-3-620, Washington Co.

Md., Eugene Chaney, Upper Marlboro, Md., LB $363,703, (2 bidders) widen, resurf. 4.283 mi. State Rte. 235 near Lexington Park, SM 309-1-520, St. Marys Co.

Md., McGuire & Rolfe, Inc., First and P Sts., S.E., Washington, D. C., LB $693,458, (4 bidders) combination surf. 4.283 mi. State Rte. 246 near Lexington Park, SM 309-1-520 and surf. 4.002 mi. State Rte. 235 near Lexington Park, S.M. 309-1-520, St. Marys Co. Bids Jan. 29.

Md., received no bids Jan. 29, surf. 4.283 mi. State Rte. 235 near Lexington Park, SM 309-1-520, St. Marys Co. CD 1-8.

BUILDINGS—LB & CA

▲ Turner Constr. Co., 1500 Walnut St., Phila., Pa., LB $5,928,000, general constr. & new bldg. for Embreeville State HOSPITAL, EMBREEVILLE, PA. General State Auth., 18 and Hale Sts., Harrisburg, Pa. Bids Jan. 10, CD 1-21.

Corbit-Calloway, Inc., 225 S. Front St., Reading, Pa., LB $394,000, plumbing & heating contr. for Group A Bldgs., LB $600,000, plumbing contr., Embreeville State Hospital, Embreeville, Pa.

Ross Electric Contr. Co., Inc., 136 Fayerweather Ave., Phila., Pa., LB $817,700, electrical contr., Embreeville, Pa.

## SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ Central Florida Constr. Co., P. O. Box 242, Miami, Fla., LB site preparation for plant, WEST PALM BEACH, FLA. Total est. $42,000,000. Pratt & Whitney Aircraft Div., United Aircraft Co., 1 Charter Oak Pl., West Hartford, Conn. CD 9-21; under Industrial Buildings.

BUILDINGS—LB & CA

▲ R. F. Ball Constr. Co., Inc., Box 2400, San Antonio, Tex., CA $6,807,779, construct and finance 420 family HOUSING unit, Tyndall Air Force Base, Inv. 58-601-57-25, PANAMA CITY, FLA. Contg. Officer, Bldg. 209, Panama City, Fla. Bids Jan. 10, CD 1-8; under LB.

▲ Florida Builders, Inc., J. C. Shelton & J. J. T. Haynsworth, 200 43rd St., S., St. Petersburg, Fla., LB $6,296,950, (8 bidders) 480 Capehart HOUSING UNITS at Army Aviation Center, FORT RUCKER, ALA., U. S. Engr., 2301 Grant St., Mobile 7, Ala. Bids Jan. 29, CD 1-11.

## MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 13 Michigan  February 19 Ohio, Wisconsin

STREETS AND ROADS

February 13 Michigan  February 19 Ohio, Wisconsin

▲ ILLINOIS—BA 2-21—Illinois State Toll Hy. Comm., 20 N. Wacker Dr., Chicago.

Boone Co.—Contr. N-3-B, grading, drainage, paving, appurtenances, erect precast concrete bridges 6.12 mi. from near Town Hall Rd. to near Markley Rd. $5,000,000. Gannett, Flemming, Corddry & Carpenter, 600 N. 2 St., Harrisburg, Pa., engrs.

DuPage Co.—Contr. E-2-A, grading, drainage, paving, appurtenances, precast concrete, structural steel bridges from Rte. 5 to west of Midwest Rd. 7.931 mi. $7,000,000. Hurst & Rosche, Inc., Hillsboro, Ill., engrs. CD 5-11.

BUILDINGS—BA

▲ Mich., Ferndale—SCHOOL—BA 3-4—City, Bd. Ed., 130 E. Nine Mile Rd., Senior High School, north of Eighth Mile Rd. west of Pinecrest, $6,500,000. Jickling & Anderson Assocs., Inc., 15011 Michigan Ave., Dearborn, archts. CD 11-29-55.

HEAVY CONSTRUCTION—LB & CA

▲ Arcole Midwest Corp., 3225 Main St., Skokie, Ill., CA $7,312,189. Cont. N-6-B and N-6-C grading, drainage paving, appurts., precast concrete bridges 4.64 mi. E. of Bartlett Rd., to W. of Roselle Rd. and 4.38 mi. W. of Roselle Rd. easterly to pt. S. of Golf Rd. between Elgin and Des Plaines, ILLINOIS, Ill. State Toll Hy. Comm., 20 N. Wacker Dr., Chicago, Ill. Teng Engineers, Inc., 514 Wilkinson St., Frankfort, Ky., engrs.

▲ J. Emil Anderson & Son, 1809 W. Balmoral Ave., Chicago, CA, $5,000,000, 1 story 500,000 sq. ft. brick FACTORY and office bldg., Carpenter Rd. and Touhy Ave., SKOKIE, ILL. Teletype Corp., 1400 W. Wrightwood Ave., Chicago, Ill. Arthur M. Heth, 3800 W. Balmoral Ave., Chicago, archt.

## WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 15 Minnesota, Missouri, North Dakota

STREETS AND ROADS

February 14 Kansas, Texas

February 15 Minnesota, Missouri, North Dakota

▲ Tex., Dallas—MAINTENANCE BASE—BA 2-18—City, Brooks Airport, Love Field, Municipal Airports, Lemmon Ave., Love Field, $6,500,000. CD 8-8.

BUILDINGS—BA

▲ Minn., Minneapolis—HOSPITAL—BA 2-21—St. Barnabas Hospital, 920 S. Seventh St., Addition to hospital, bldg. with underground service connection, Chicago Ave., between Seventh and Eighth Sts., $5,000,000. Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, archts. CD 9-27.

BUILDINGS—LB & CA

▲ D. C. Bass & Sons, Enid, Okla., LB $7,795,681, (4 bidders) construct and finance 640 HOUSING UNITS, Forbes Air Force Base, Topeka, Kan. Bids Jan. 25, CD 1-2.

## FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 20 California

STREETS AND ROADS

February 14 Nevada

February 20, 21, 27, 28, March 3, 16 California

HEAVY CONSTRUCTION—LB & CA

▲† M. & K. Corp., 519 California St., San Francisco, Calif. and Stolte, Inc., 8451 San Leandro St., Oakland, Calif., CA $5,428,000, (4 bidders) sewage disposal facilities plant, Naval Ammunition Depot at Mare Island Naval Shipyard, NBy 91703. Spec. 50115, VALLEJO, CALIF. Dist. P. Wks. Office, Dept. Navy, 12th Naval Dist., San Bruno, Calif. Bids Jan. 16, CD 12-6.

## LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲† NICARAGUA—HA 2-28—Bureau P. Rds., Dept. Commerce, Inter-American Hy. Office, General Services Bldg., Wash. 25, D. C.

Proj. B-A—grading, drainage, selected borrow base, etc. on Inter-American Hy. from Sebaco approx. 60 mi. north of Managua and extend north for approx. 60 mi. to Condega. Bids Jan. 4 rejected. LB $5,225,153. adv. ENR 2-7. CD 1-8; under LB.

## U. S. POSSESSIONS

HEAVY CONSTRUCTION—BA

▲† T. H., Barber's Point—HANGAR, etc.—BA 3-6—P. Wks. Office, 14th Naval Dist., P. Wks. Office, Pearl Harbor, T. H., constr. 100x566 ft. steel, concrete hangar; 110,000 sq. ft. 12 in. reinforced Portland cement for parking apron and asphaltic taxiways, Naval Air Station, NBy 8007. $4,000,000. Plans deposit $110. CD 9-24-51.

(Proposal Advertisements see pp. 139 and 140)

*Prescription for Profit...*

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## with these pay-off advantages

- **CAPACITIES**
  12 cu. yds. struck . . . 14 yds. heaped 3:1 . . . 16 yds. at 1:1 slope.
- **EFFICIENT POWER**
  218 h.p. with 5-speed transmission is geared to working ranges . . . top speed loaded is over 21 m.p.h. for fast cycle time.
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  Standard No-Spin differential eliminates wheel spin . . . 26.5 x 25 tires provide extra traction and capacity.
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  Push-pull 90° full hydraulic steering for non-stop turns in 31 ft.
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  Four sections are reversible and interchangeable for longer life . . . adjustable for most efficient loading in any scraper material.
- **LOWER MAINTENANCE COSTS**
  More on the job availability because major components are easily accessible . . . clutch and differential can be replaced in 1/3 the usual time for scrapers, transmission in 1/8 the time.
- **TOPS FOR DEPENDABILITY AND PERFORMANCE**
  Pay-off performance proved by contractor preference for "Eucs" . . . the fastest growing line of scrapers in the industry.

***See your Euclid dealer for more facts and figures and a production cost estimate on the S-12—you'll find that Euclids are your best investment.***

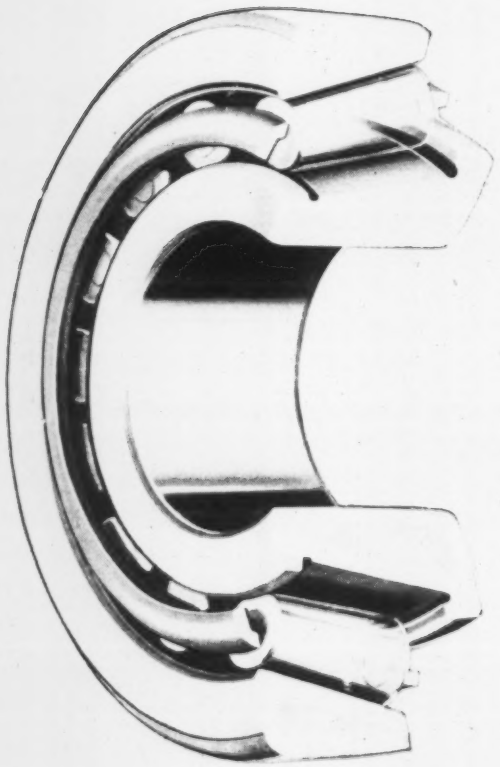
**EUCLID DIVISION**
**GENERAL MOTORS CORPORATION**
**Cleveland 17, Ohio**

**MORE VERSATILITY . . . 13 yd. (struck) Bottom-Dump is interchangeable with scraper bowl for flexibility to meet changing work requirements with minimum investment in equipment.**

# Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

# There's a BOWER TAPERED ROLLER BEARING engineered to fit your product



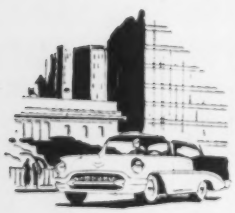
## Types and sizes to fit a wide range of tapered bearing applications

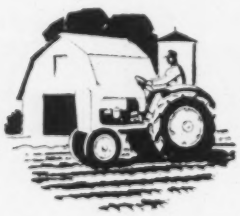
There's no need to compromise with bearings! Whatever your product, if it uses tapered roller bearings, call in a Bower engineer for expert help on selecting the exact type and size you need.

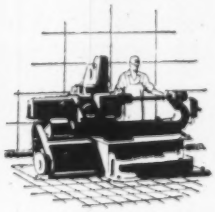
Depending on your own particular needs, he'll make sure you get the exact size and type—selected from Bower's complete tapered line—engineered to assure maximum performance in your application.

Most important of all, when you specify Bower tapered roller bearings for your product, you get all the advantages of advanced Spher-O-Honed design—less maintenance, longer life, smoother operation. Get the full facts on the *complete* Bower line.

**Tapered, Straight and Journal Roller Bearings for every field of transportation and industry**





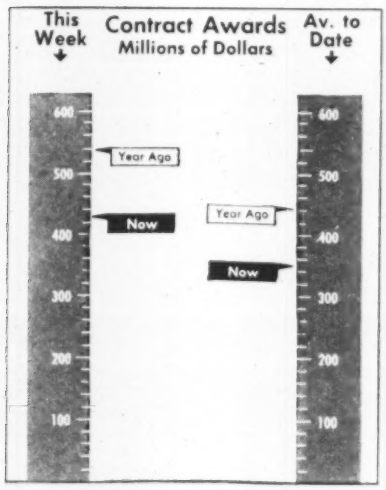


BOWER ROLLER BEARINGS

*BOWER ROLLER BEARING DIVISION • FEDERAL-MOGUL-BOWER BEARINGS, INC., DETROIT 14, MICH.*

# Construction Scoreboard

## Activity this Week




### AMOUNT OF CONTRACTS LET

| By Ownership | This Week, millions | Cum. 6 wks 1957 | Cum. 6 wks Chge % |
|---|---|---|---|
| Federal | $31.1 | $254.3 | +0.2 |
| State and Municipal | 128.1 | 795.5 | +7 |
| Total Public | 159.2 | 1,049.8 | +5 |
| Total Private | 269.3 | 1,042.4 | −37 |
| U. S. Total | $428.5 | $2,092.2 | −22 |
| **By Type of Work** | | | |
| Waterworks | $25.3 | $40.9 | +30 |
| Sewerage | 2.8 | 60.9 | −52 |
| Bridges | 10.5 | 74.7 | +1 |
| Highways | 44.8 | 310.9 | +30 |
| Earthwork, Waterways | 1.0 | 128.1 | +56 |
| Buildings: | | | |
| Public, Excl. Housing | 39.1 | 251.1 | +1 |
| Public Housing | 8.0 | 10.2 | −6 |
| Private Housing | 53.7 | 380.9 | −51 |
| Commercial | 12.9 | 90.1 | −73 |
| Industrial | 201.3 | 541.3 | +7 |
| Unclassified | 26.1 | 173.1 | −19 |
| U. S. Total | $428.5 | $2,092.2 | −22 |

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

### NEW CAPITAL FOR CONSTRUCTION

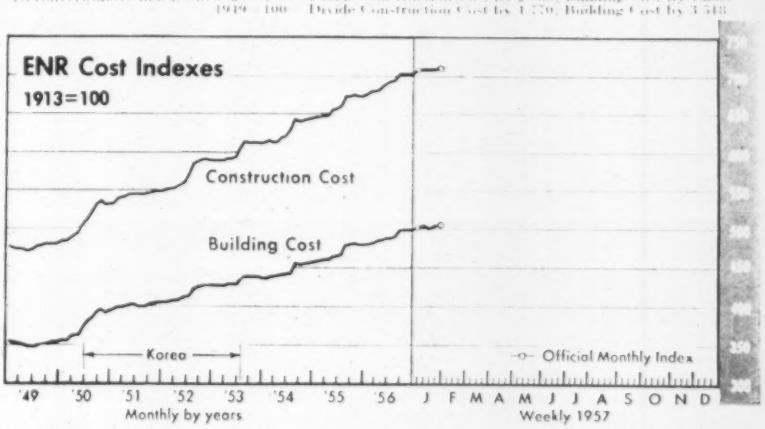
| | Week of Jan. 31 | Cum. 5 wks 1957 | Cum. 5 wks Chge '56-'57 % |
|---|---|---|---|
| | millions | | |
| Corporate Securities | $57.5 | $568.2 | +372 |
| State and Municipal: | | | |
| All Except Housing | 91.3 | 115.1 | +36 |
| Housing | ... | ... | ... |
| Federal Loans | 2.6 | 13.1 | +49 |
| Federal Aid | ... | ... | ... |
| Total Nonfederal | $151.4 | $1,026.3 | +125 |
| Federal Appropriations: | | | |
| In U. S. | ... | ... | ... |
| Outside U. S. | ... | ... | ... |
| Total New Capital | $151.4 | $1,026.3 | +125 |

## Cost Indexes as of Now

| ENR INDEXES, 1913 = 100; 20-cities' average | Week of Jan. 31 1957* | % Change from Jan. 3 1957 | % Change from Feb. 2 1956 |
|---|---|---|---|
| Construction Cost | 711.48 | +0.5 | +4.6 |
| Building Cost | 501.01 | +0.4 | +4.3 |

*Official Monthly Index for February, 1957

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.650; Building Cost by 1.850.
To convert above indexes to 1949 = 100: Divide Construction Cost by 1.770; Building Cost by 3.543.




| WAGE RATES, 20-cities' average | February 1957 | % Change from Jan. 1957 | % Change from Feb. 1956 |
|---|---|---|---|
| Common | $2.220 | +0.4 | +4.9 |
| Skilled (average 3 trades) | 3.159 | +0.03 | +4.5 |
| Bricklayers | 3.233 | +0.1 | +4.7 |
| Structural Ironworkers | 3.113 | +0.03 | +4.6 |
| Carpenters | 3.201 | 0 | +4.3 |

| MATERIAL PRICES, 20-cities' average | February | % Change from Jan. 1957 | % Change from Feb. 1956 |
|---|---|---|---|
| Structural Steel (average 3 mills), per cwt. | $5.000 | 0 | +8.7 |
| Lumber, 2x4 Fir, per M fbm | 116.777 | +0.6 | −4.0 |
| Lumber, 2x4 Pine, per M fbm | 104.733 | +1.9 | +3.4 |
| Cement, bulk, per bbl | 3.872 | +0.5 | +5.1 |
| Sand, per ton | 2.113 | +0.5 | +1.9 |
| Ready-mixed concrete, per cu yd | 13.188 | +0.1 | +2.3 |
| Gypsum Sheathing, ½"x2'x8' per M-sf* | 62.928 | +0.7 | +2.0 |
| Fiber board sheathing, ½" sq. ed., per M-sf* | 71.314 | +1.1 | +3.2 |
| Mineral wool insulation, 3" batts, per M-sf* | 71.117 | +0.1 | −2.2 |
| Crushed stone, 1½", per ton, CL | 2.813 | +0.2 | +2.0 |
| Concrete blocks, sand gravel, 8"x8"x16", each* | 0.227 | +0.1 | +2.3 |

| | January 1957 | % Change from Dec. 1956 | % Change from Jan. 1956 |
|---|---|---|---|
| Brick, common, per M* | $87.313 | +0.3 | +5.1 |
| Lime, hydrated finishing, per ton, CL | 35.308 | +1.5 | +4.1 |
| Structural clay tile, 3x12x12in., per M, 2,000 up* | 175.921 | +0.3 | +3.4 |
| Vitrified clay sewer pipe, std. 12 in., per ft* | .1.299 | +2.1 | +7.6 |
| Concrete sewer pipe, 12 in., per ft* | 1.112 | −2.5 | +6.2 |

* Delivered, trucklots

### ENR INDEX REVIEW

| | Construction Cost 1913 = 100 | Construction Cost 1949 = 100 | Building Cost 1913 = 100 | Building Cost 1949 = 100 | Volume 1913 = 100 | Volume 1949 = 100 |
|---|---|---|---|---|---|---|
| 1956 | | | | | | |
| Feb. | 680.21 | 142.59 | 483.08 | 137.32 | 736 | 213 |
| Mar. | 680.20 | 142.59 | 483.11 | 137.34 | 786 | 227 |
| April | 683.28 | 143.24 | 485.56 | 138.02 | 764 | 221 |
| May | 688.43 | 144.32 | 487.36 | 138.54 | 684 | 198 |
| June | 692.13 | 145.09 | 488.70 | 138.92 | 636 | 184 |
| July | 694.75 | 145.64 | 489.23 | 139.07 | 740 | 214 |
| Aug | 696.31 | 145.97 | 491.22 | 139.63 | 583 | 168 |
| Sept | 701.91 | 147.15 | 500.10 | 142.16 | 580 | 168 |
| Oct | 703.88 | 147.56 | 499.54 | 142.00 | 729 | 211 |
| Nov | 701.13 | 147.01 | 500.58 | 142.27 | 542 | 157 |
| Dec | 703.82 | 147.55 | 500.17 | 142.18 | 624 | 180 |
| 1956 Average | 692.37 | 145.11 | 490.76 | 139.50 | 671 | 194 |
| 1957 | | | | | | |
| Jan. | 707.90 | 148.40 | 501.96 | 142.69 | 501 | 146 |
| Feb. | 711.48 | 149.15 | 501.01 | 143.27 | .... | .... |

# Contract Awards Off as Private Work Slumps

January's wintry blasts chilled contract awards for heavy construction, as reported by ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY.

Total awards of $1,664 million skidded 16% below December 1956, and fell short of the January weekly contract rate of a year ago, chiefly because of a sharp drop-off in contracts for private construction.

However, there were some bright spots in the January picture. Awards for highways, bridges, earthwork-irrigation-drainage and industrial building pulled ahead of year-ago figures by a wide margin. Every type of public works except waterworks did better last month than in January, on a weekly average basis.

Roadbuilders signed up $266 million in new contracts for highways, 30% more than the weekly average for December and 45% more than the weekly rate for January 1956.

Earthwork-irrigation-drainage projects accounted for a total of $124 million in new contracts last month. This was 91% better than the December rate and 34% more than a year ago.

Awards for construction of public bridges totaled $64 million, up 110% over December's sluggish pace and 32% ahead of the comparable year-ago total.

Industrial building awards topped all categories for the month of January with a total of $340 million. This outran the January 1956 weekly pace by 5%.

Among the month's major industrial contract awards were a $35-million steam electric generating plant for California; a $25-million refinery for Texas; a $20-million chlorine-caustic plant for Louisiana; and a $39-million steam generating plant for Wisconsin.

Despite the continued financing problems facing homebuilders, this type of construction activity accounted for a total of $327 million last month in private mass housing awards. The total was up 4% over December but fell short of January 1956, by a startling 30%.

Part of the current homebuilding total reflects awards for Capehart military housing projects. Although built near government installations (such as Army and Navy bases), these are considered private housing because such projects are privately financed and privately-built.

## Construction Costs Inch Higher Again

Construction costs, as measured by the ENGINEERING NEWS-RECORD Building and Construction Cost Indexes, have risen for the second consecutive month.

ENR's Construction Cost Index advanced three points to a new record high of 711.48, based on 1913 = 100. The Building Cost Index similarly rose two points to a new record of 504.01, based on 1913 = 100.

The latest cost increases were attributed to price increases for lumber and cement and scattered wage boosts.

- Douglas fir 2x4s carried higher price tags in five cities, Chicago, Cincinnati, Los Angeles, New Orleans and New York. Lower Douglas fir prices were reported in two cities, San Francisco and Seattle.
- Southern pine 2x4 prices rose in Dallas and New York.
- Portland cement prices were up in Dallas, Denver and Kansas City.
- Bricklayers and structural ironworkers in Kansas City received wage increases, while laborers on building construction in Pittsburgh also won a raise.

To a large extent, the increase in lumber prices reflected higher freight rates, although a $26 per Mfftbm price jump in Douglas fir 2x4s in Denver indicates a sudden strong demand in that area.

The rise in costs has been expected. But, contractors may receive some small consolation from the fact that the rate of increase so far this year is slightly less than during the same weeks of 1956.

ENR's Construction Cost Index rose 0.5% from January to February this

(Continued on page 130)

## Engineering Construction Contracts — January 1957

ENGINEERING NEWS-RECORD reports engineering U. S. construction projects at the following minimum costs: Waterworks, excavation, drainage and irrigation, $443,000; other public works, $75,000; industrial buildings, $63,000; other buildings, $244,000

Five Weeks (Thousands of Dollars Omitted)

| | January, 1957 | | | | | | Total U. S. | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | New England | Middle Atlantic | South | Mid-West | West of Mississippi | Far West | January 1957 (5 weeks) | January 1956 (4 weeks) | Change '56 to '57 (Avg. Wk.) | Canada January 1957 |
| **Public Works** | | | | | | | | | | |
| Waterworks | 198 | 1,038 | 1,126 | 2,163 | 9,181 | 1,892 | 15,608 | 22,400 | −44 | 2,126 |
| Sewerage | 1,646 | 10,161 | 758 | 24,302 | 4,792 | 16,338 | 57,997 | 112,240 | −59 | 2,309 |
| Bridges | 4,396 | 19,734 | 8,225 | 14,623 | 8,792 | 8,073 | 63,843 | 38,637 | +32 | 1,725 |
| Earthwork and waterways | 529 | 10,753 | 24,141 | 13,687 | 12,021 | 62,993 | 124,154 | 73,302 | +34 | 7,884 |
| Streets and roads | 11,168 | 65,506 | 36,098 | 82,198 | 36,233 | 34,700 | 265,903 | 146,508 | +45 | 4,063 |
| Public buildings, residential | 1,055 | 12,911 | 2,752 | 6,049 | 8,615 | 888 | 32,248 | 34,782 | −26 | 7,625 |
| Other public buildings | 22,746 | 72,933 | 21,854 | 34,268 | 30,248 | 30,069 | 212,118 | 193,245 | −12 | 15,320 |
| Unclassified | 16,514 | 38,105 | 12,278 | 4,756 | 17,863 | 29,262 | 118,778 | 104,273 | −9 | 7,719 |
| **Total public** | **58,260** | **231,141** | **107,242** | **182,046** | **127,745** | **184,215** | **890,649** | **726,017** | **−2** | **48,074** |
| Federal government (included in above classifications) | 17,244 | 50,439 | 36,850 | 14,345 | 40,143 | 64,172 | 223,193 | 104,589 | −8 | 22,897 |
| **Private** | | | | | | | | | | |
| Bridges | | | | 450 | | | 450 | 806 | −55 | |
| Industrial buildings | 16,385 | 19,563 | 44,103 | 94,104 | 101,362 | 64,430 | 339,956 | 250,160 | +5 | 19,542 |
| Mass housing | 15,402 | 124,984 | 86,792 | 46,448 | 10,148 | 43,420 | 327,194 | 471,295 | −30 | 14,000 |
| Commercial buildings | 9,767 | 17,117 | 8,686 | 22,347 | 11,170 | 8,142 | 77,229 | 198,779 | −69 | 5,854 |
| Unclassified | | 382 | 4,248 | 10,982 | 12,239 | 379 | 28,230 | 34,890 | −35 | 2,122 |
| **Total private** | **41,554** | **162,046** | **143,829** | **174,331** | **134,919** | **116,380** | **773,059** | **866,820** | **−29** | **71,608** |
| **Total Engineering Construction:** | | | | | | | | | | |
| **January, 1957 — 5 weeks** | **99,814** | **393,187** | **251,071** | **356,377** | **262,664** | **300,595** | **1,663,708** | | **−16** | **119,682** |
| December, 1956 — 4 weeks | 54,050 | 508,703 | 170,605 | 326,001 | 357,628 | 173,245 | 1,590,232 | | | 68,704 |
| January, 1956 — 4 weeks | 100,206 | 649,321 | 143,615 | 227,345 | 345,515 | 126,855 | | 1,592,857 | | 125,367 |
| % Change '56 to '57 (Avg. Wk.) | −20 | −52 | +40 | +25 | −39 | +90 | | | | −24 |

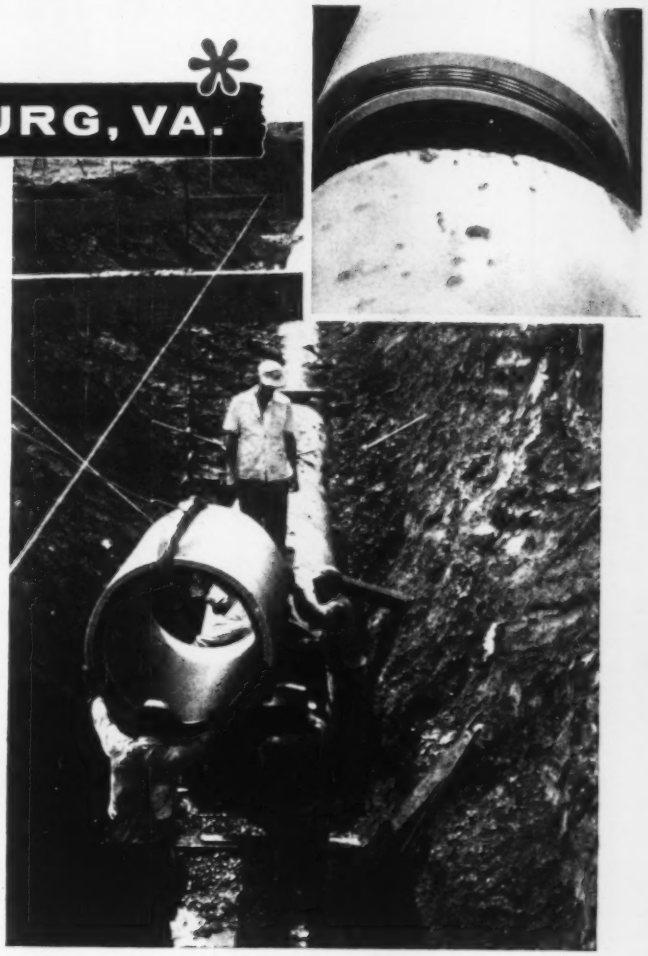
# FREDERICKSBURG, VA.*

*chooses*

# TYLOX RUBBER PIPE JOINTS

*to*

- ***STOP INFILTRATION***
- ***PREVENT JOINT FAILURES***
- ***SPEED PIPE-LAYING***



For its new sewage treatment plant, the city wanted long-lasting, low-maintenance lines—built within the budget. Engineers wanted leakproof lines that would *stay* leakproof. Contractors wanted fast pipe-jointing to offset construction problems posed by wet soil conditions . . .
Here's how the choice of TYLOX Rubber Joints helped meet all these requirements efficiently and economically:

TYLOX Joints seal water-tight by compression, and natural resilience of the rubber *keeps* the seal tight. Tylox resists sewerage and industrial waste corrosives . . . its specially compounded rubber never deteriorates. TYLOX speeds pipe-laying through fast assembly, and by eliminating delays . . . wet trenches can't slow up the work, and laid line can be backfilled immediately.

***WRITE TODAY*** for more details and illustrated performance histories on TYLOX Joints. Assure fast-working, leakproof and non-deteriorating joints for *your* pipe jobs by specifying TYLOX RUBBER JOINTS.

5026

* **PROJECT:** Sewage Treatment Plant, City of Fredericksburg, Va.

**ENGINEERS:** Freeman Funk, City Engineer, and Whitman, Requardt & Associates, Consulting Engineers

**CONTRACTORS:** Abbot and Ritchie, General Contractors, W. C. Spratt, Pipe Contractor, Fredericksburg, Va.

**PIPE:** TYLOX-Jointed Reinforced Concrete, furnished by Concrete Pipe & Products Co., Inc., Richmond, Va.

**HAMILTON KENT MANUFACTURING COMPANY**

KENT, OHIO

427 West Grant St. Orchard 3-9555

It's the hard work that separates the "men" from the "boys" in construction equipment. Faced with their greatest construction challenge in history—the 41,000-mile Interstate Highway System—contractors must depend on "men" if they are to get the job done profitably, and get it done on time.

Any machine can do a passable job when the going is easy. But this challenge involves *hard work* . . . the kind that tests the ability of equipment to produce. That's the kind of work that made Caterpillar-built machines the leading equipment used by contractors. CAT* units are designed and built for money-making performance under the toughest conditions. Where the going is roughest, Caterpillar

equipment gets and handles the job. Got some hard work to be done? Give it to the machines that want it, like it and can do it profitably for you—Caterpillar-built machines!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

# CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**HEAVY-DUTY MACHINES FOR THE HARD WORK**

year, as against an 0.6% rise in the same period last year. The Building Cost Index for the 1957 period is up 0.4% as against 0.3% last year.

Further, the percentage rise in both cost indexes during the 12 months ended Feb. 1, 1957, is less than it was during the 12 months ended Feb. 1, 1956. The Construction Cost Index has advanced 4.6% in the past 12 months, compared with a 5.4% rise from Feb. 1, 1955 to Feb. 1, 1956. Similarly, the Building Cost Index has risen 4.3%, compared with 5.1% for the earlier period.

The apparent reason for this is that Douglas fir lumber prices currently are averaging 4% lower than a year ago while southern pine has increased only 3.4% during the latest 12 months, as against a 4.9% rise in the Feb. 1, 1955 to Feb. 1, 1956 period.

## Steel Orders Climb

### Structural shipments also rise in December

A near-record influx of fabricated structural steel orders in December (404,429 tons) brought the 1956 bookings to a new high of 4,013,186 tons, 9% ahead of 1955, reports the American Institute of Steel Construction.

December bookings topped the year-ago total by 10% and just fell short of matching the all-time high of 405,396 tons, set in January 1956.

More important to steel-short contractors was an increase in shipments. Fabricated structural steel shipments in December totaled 297,785 tons, 20% more than in December 1955.

Fabricators last year shipped a record tonnage of 3,205,488 tons, 7% more than in 1955. But even with a greater volume of shipments, the backlog of orders remained large at year's end.

Under the pressure of a heavy flow of orders, fabricators' backlogs pushed upward to 3.4 million tons. The industry has scheduled 1.3 million tons of this total for fabrication by April 30.

## Once-Vetoed Gas Tax Bill Passed Again by Legislature

The New Jersey legislature has repassed the once-vetoed bill to appropriate $8.7 million from a state treasury surplus for state and state-federal highway construction projects.

The governor had insisted that the money should be raised by adding 1 cent a gallon to the present 4-cent-a-gallon state levy on gasoline.

(B&H continued on page 132)

# Construction Markets

## On-the-Spot Report From Oklahoma City

**"The volume of industrial, commercial and institutional construction to be on the market here during the first half of 1957 will be almost all the industry can handle."**

That optimistic view of the immediate future of the Oklahoma City construction market was voiced by Ruth Ann Leslie, executive manager of the Associated General Contractors of Oklahoma.

"There is definitely nothing here to cloud the market, which, at this time, looks very, very good for the industry," the AGC executive declared.

Doing business in a metropolitan area labeled "one of the five fastest-growing cities in America," builders in Oklahoma City are looking toward 1957 as even better than a record 1956.

**All factors seem favorable. Labor is in good supply and little trouble is expected on that score. Materials are adequate, except for steel, which has caused some job delays. And money has been abundant for all types of construction except home-building.**

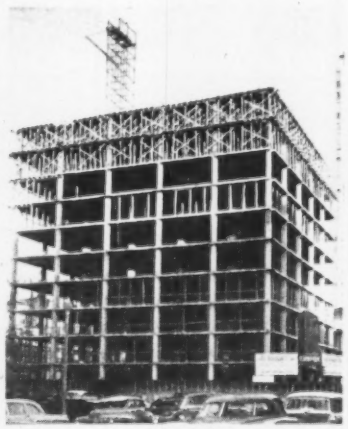
First big construction news of 1957 in the Oklahoma City area was announcement of plans for an early summer start on a $20-million shopping center. Another $8-million center is slated to get under way in early spring and a $5-million center will be started in April.

**A downtown building boom, the first in Oklahoma City in 35 years, will continue to spark industry in 1957 just as it did in 1956. Some of the major projects scheduled to start in the downtown area in the next few months include a $7.1-million federal building addition, a $3-million post office, a $1-million hotel addition and two office buildings, totaling $4.5 million.**

Throughout the city's industrial community, expansion programs are being started almost daily for both large and small plants.

Biggest job in this category is a $14-million Civil Aeronautics Center project that is just getting started at Will Rogers Field, the municipal airport.

In an attempt to keep pace with its rapidly-growing industrial community and a startling population increase that added nearly 25,000 residents last year, Oklahoma City has started land acquisition for a new reservoir 130 miles south of the city. This reservoir will be financed by a $13-million bond issue.



A MAJOR DOWNTOWN Oklahoma City project is this $4.4-million, 18-story office building, owned by Sylvanus G. Felix, local investor and attorney.

The city also has $3 million to spend on sewer and water lines and a similar amount on streets. Continuation of one multi-million-dollar expressway project and the start of two more will help boost the size of the local construction market.

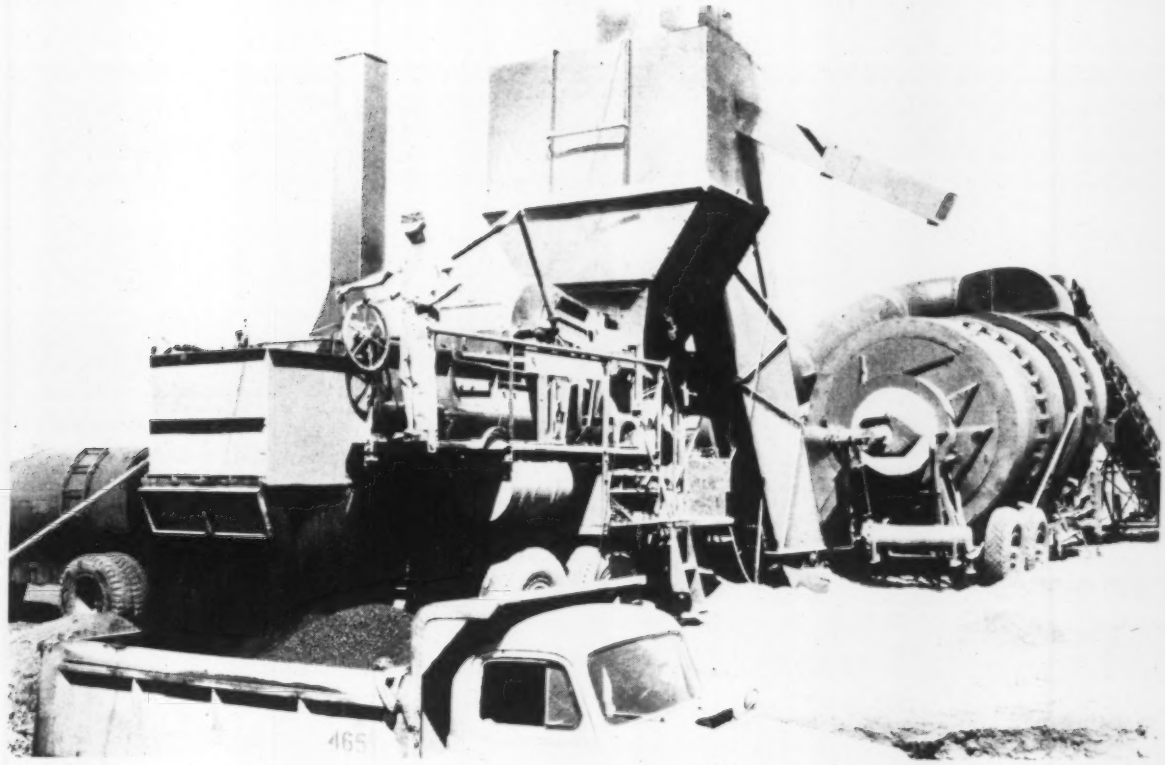
Services that a growing population demands are reflected in plans for institutional buildings. Contracts will be awarded this month, for example, for a $1.5-million Oklahoma City University dormitory project. And soon to reach the award stage are a $1.5-million Catholic seminary and a $3-million Baptist hospital.

**But, the flood of new work for most segments of the construction industry has left one group—the homebuilders—high and dry.**

Home starts in Oklahoma City dropped 35% under 1955 last year and Thomas S. Morris, president of the city's homebuilders group, sees little hope for a stepped-up market.

"Increasing the interest rates for FHA and GI loans won't help a bit," Morris believes, "because the competition for money is 5½% to 7%."

Conventional loans can be obtained at 5½% to 6% for higher-priced homes, but low-priced houses are virtually out of the market.



# 48 hours after this picture was taken, this asphalt plant was operating 70 miles away

In its first season of operation, this Barber-Greene Model 848 continuous plant was moved to six different job sites . . . produced 111,315 tons of quality hot mix in 555 hours of operation for an average of 200 tons per hour.

All plant components are mounted on rubber-tired chassis for over-the-road towing at truck speeds.

## Gradation Control Unit Added

Typical of the many Barber-Greene plant owners, this Minnesota contractor operated with the basic equipment first and later purchased the Gradation Control Unit. He can meet any specification, and has the flexibility of towing the Gradation Unit only to those jobs requiring screening after drying.

## Inherently Automatic

Plant operation is based on the Barber-Greene continuous principle which is inherently automatic. Once the controls are set, the plant produces at top efficiency and accuracy.

Barber-Greene manufactures a complete line of continuous and batch asphalt mixing plants with capacity ranges to meet your production requirements.

Same continuous plant with Gradation Control Unit added.

**Write for literature on any continuous or batch plant in Barber-Greene's complete line.** 56-2 A

**Barber-Greene** BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

## Added Incentive

### Seek higher interest rates on tax warrants

The Colorado legislature has been asked to increase the interest rate on anticipation warrants to 4%, following the failure of the Colorado Highway Commission to draw even one bid when it recently offered $8 million in anticipation warrants.

Chief Highway Engineer Mark U. Watrous said bond buyers refused to submit bids because a statute limited the interest rate to a maximum of 2.5%.

The $8 million proposed issue is part of $75 million authorized by the 1954 legislature, which specified that no more than $8 million of the warrants could be sold in any one year.

The funds are used for highway construction. The anticipation warrants are retired with highway department revenues.

Colorado is not alone with its fiscal worries.

Tight money is tossing a curve at expansion plans for the City of Phoenix.

City Engineer R. Gail Baker is allowing discounting of 5% for city improvement bonds in figuring a new estimate for a city sewer project.

Low bid received for the project was $13,000 higher than the city's $209,000 estimate.

The city council was told that part of the difference came when the low bidder found he would be able to sell city bonds to investment bankers for only 95¢ on the dollar.

The city council has voted to make up the $13,000 difference. But it considers the issue as a bad omen for future construction.

## Five New Members Are Appointed to Loan Board

Administrator Albert M. Cole, of the Housing and Home Finance Agency, has appointed five new members to the National Committee of the Voluntary Home Mortgage Credit Program and reappointed four members whose terms had expired.

The national committee is a policy-making body for the VHMCP, which facilitates the flow of funds for government insured and guaranteed home loans to small towns, remote communities and minority groups.

The new national committee members are: Ebney V. Camp, Jr., vice president and treasurer, Liberty National Life Insurance Co., Birmingham, Ala.; Asa T. Spaulding, vice president and actuary, North Carolina Mutual Life Insurance Co., Durham, N. C.; Paul M. Minter, vice president, National City Bank of Cleveland, Cleveland; Lloyd Cramer, president, Washington Heights Federal Savings & Loan Association, New York City; and Richard B. Haskell, president, Mechanic Savings Bank, Hartford, Conn.

Reappointed were: W. A. Clarke, president of the W. A. Clarke Mortgage Co., Philadelphia; George S. Goodyear, president of George Goodyear Co. (home builders), Charlotte, N. C.; H. J. Mumnerlyn, president, H. J. Mumnerlyn, Inc. (retail lumber dealers), Bennettsville, S. C.; and Oliver M. Walker, president of Walker & Dunlop, Inc. (realtors), Washington, D. C.

## Governor's Mansion "Out." Economy Begins at Home

Governor G. Mennen Williams, of Michigan, has started slashing his state budget by cutting out construction items.

Knocked out of the 1957 calendar budget is construction of a $3-million Supreme Court building. Plans for the building have been completed.

The governor also removed from the budget funds for construction of a state mansion for the governor. The governor owns his own home in Lansing and has said that he does not need state housing.

Plans already have been drawn and approved for the governor's mansion, which would be built at an estimated cost of $250,000.

The governor's action is not final; the appropriations committees of the legislature have the final word.

## N.Y. Thruway Reports 39% Revenue Increase in 1956

The New York State Thruway Authority's revenue from operation of the superhighway in 1956 totaled $26.4 million, a 39% increase over 1955.

In a year-end report, Authority Chairman B. D. Tallamy noted that $21.9 million of the total comprised toll revenue, a 63% increase from the $13.5 million of the previous year.

## $20-Million Long-Range Park Plan for San Diego

The San Diego city council has formally adopted a $20-million long-range master plan for park and recreational development.

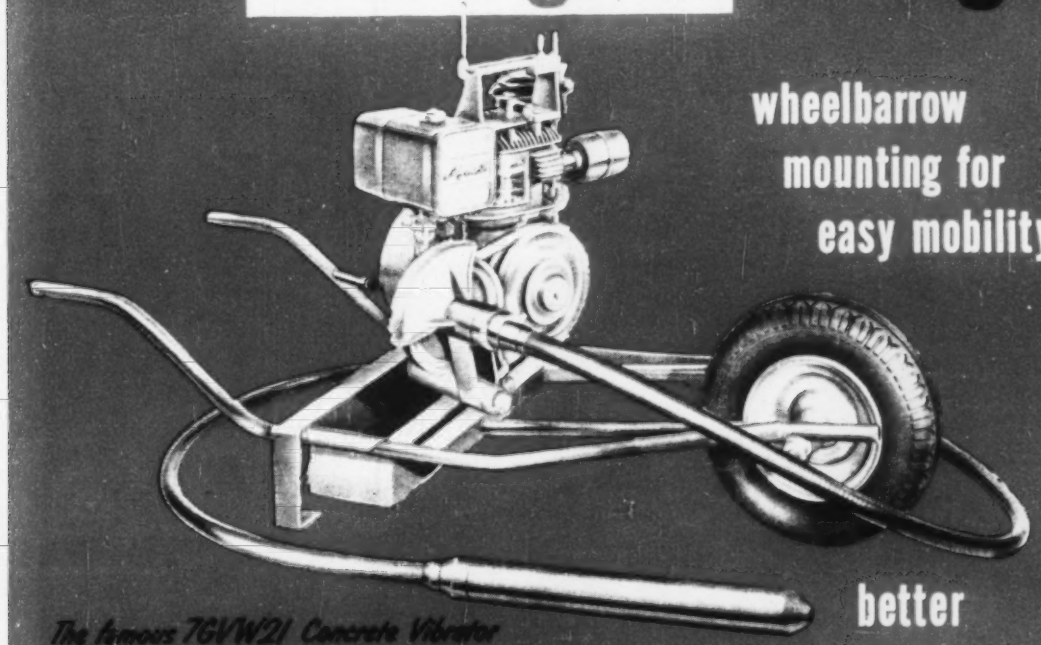
The plan would increase present park acreage from 5,700 to more than 6,100 acres and would include construction of parkways, swimming pools, community centers, tennis courts, golf courses, boat landings, a marine stadium and landscaped parks.

## Check for Biggest Electric Revenue Bond Sale

Money for power changes hands as Rudolf Smutny, senior partner of Salomon Bros. & Hutzler, New York investment firm, gives a check for $163.2 million to Memphis, Tenn., officials to pay for the city's power project, largest single municipal project of its type. City officials pictured here are (left to right) Commissioner J. T. Dwyer, comptroller C. W. Crutchfield and N. W. Wade, chief of the public utility division.

*now, in concrete vibrators, too,*

# if it's Remington, it's right!



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*The famous 7GVW21 Concrete Vibrator has 4 great features that make it right for you!*

- Dependably powered by rugged single-cylinder, 4-cycle air-cooled gasoline engine with countershaft drive and automatic clutch.
- This versatile unit can also be used to power attachments for concrete surfacing, sanding, wire brushing, pumping and other jobs.
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**MODEL 7GVW21** 5 HP concrete vibrator. Available with 2¾" x 20" 7,000 RPM vibrating head or 2 ⅜" x 12" 10,000 RPM vibrating head.

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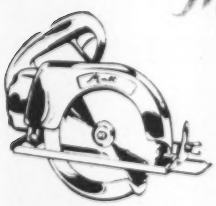
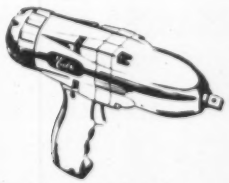


Electric circular saws are best buys for every purpose



Electric impact wrenches speed up work on heavy equipment

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You'll use less cement, coarser aggregate and produce denser, more uniform concrete...and do it in fewer man-hours!

That's a mighty big order to be sure! But it's being done every day on every kind of concrete job by these indispensable vibrators by Remington—the newest name in power tools and famous for 141 years for quality in sporting firearms and ammunition.

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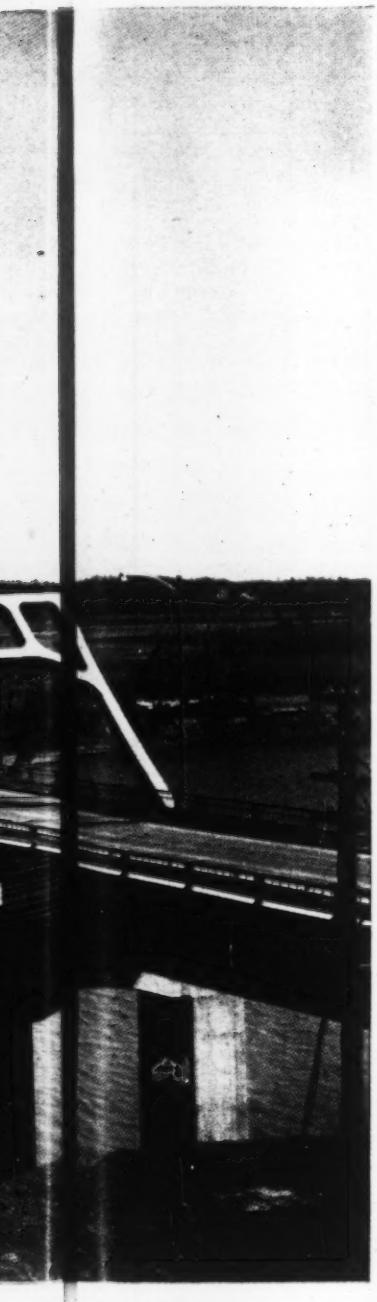
# *Selected to save money..*

## USS HIGH STRENGTH STEELS

*–the big step forward in bridge construction*

# ..1825 tons of USS TRI-TEN "E" Steel are used in award-winning bridge



The Jefferson City Bridge was singled out for honorable mention by the American Institute of Steel Construction as among the most beautiful bridges* opened for traffic in 1955. This span across the Missouri River is typical of the more than 95 major bridges that have been built with USS High Strength Steels in the past four years.

The 3093'9"-long Jefferson City Bridge features a three-span continuous-tied arch unit with spans measuring 416', 640' and 416'. At present it carries a 28' roadway flanked by two 5' sidewalks inside the trusses, but sidewalks eventually can be moved outside the trusses to expand the roadway to 38'. USS TRI-TEN "E" Steel is used in trusses, web members and expansion devices.

Because USS TRI-TEN "E" Steel's yield point is 50% higher than that of structural carbon steel (ASTM A7) in thickness of ¾" and less, and because it has twice the resistance to atmospheric corrosion, it was possible to safely use this grade in lighter sections throughout.

This not only saved weight, thus saving steel and reducing transportation and erection costs, but resulted in even more important secondary savings. The smaller steel sections used, by decreasing the dead load and lessening the wind area, made it possible to reduce the size—and cost—of the piers and shafts.

Here again, as in other important bridges built with USS High Strength Steels, the resultant accumulated savings add up to important cost reductions. (In some cases these have run as high as 15% of the cost of the structure.)

For further information on ways that USS TRI-TEN "E" and other USS High Strength Steels—USS MAN-TEN and USS COR-TEN—can be incorporated in your designs to provide maximum strength, safety and durability with a minimum of weight and costs, send for a copy of our "Design Manual for High Strength Steels." Write on your company letterhead to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

** The prize-winning "most beautiful" long span bridge—the Missouri River Bridge at Leavenworth, Kan.—was also built with USS TRI-TEN "E" Steel.*

**The Jefferson City-Missouri River Bridge**

*Owner*—Missouri State Highway Department

*Design*—Sverdrup & Parcel, Inc., St. Louis, Mo.

*Fabrication*—Truss span by Stupp Brothers Bridge and Iron Company, St. Louis, Mo. Approach superstructure by Pacific Bridge Company, San Francisco, Calif.

*Erection*—John Beasley of Dallas, Texas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COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · NATIONAL TUBE DIVISION, PITTSBURGH
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USS HIGH STRENGTH STEELS 1933 1957 24 YEARS OF PERFORMANCE

UNITED STATES STEEL

AFL-CIO wrestles with merger problems as . . .

# Building Trades Limit Price of Unity

The AFL-CIO Building Trades Department is settling down for a long and bitter battle with the labor federation's industrial unions.

That's the outcome of 10 days of peace-making efforts at the AFL-CIO Executive Council meeting in Miami Beach, which served only to widen the breach. Now, the building trades are openly pledged to take the offensive, without regard to federation rules against raiding, by seeking to regain territory in the hands of industrial unions.

A policy statement by the 19 building trades presidents "to strengthen and enlarge the building and construction trades . . . to regain work now being performed by other organizations . . . to intensify the organization of the unorganized" was the culmination of a series of tactical setbacks throughout the council session.

The scrapping centered on jurisdiction over construction in industrial plants, but it ranged across Taft-Hartley, atomic energy and state merger issues. When the smoke cleared, the Building Trades Department, headed by Richard J. Gray, came up with its own plans for firm and vigorous action.

While the statement indicates a call to war on the industrial unions, there's little likelihood it will greatly extend the current troubles. And it's even less likely that it will mean a splitting off of the Building Trades Department from the AFL-CIO, the troubles will continue until an acceptable peace formula is found.

But it's likely there will be a further withdrawal within the confines of the federation itself. The laborers, teamsters and other craft unions are thinking of withdrawing from the industrial union department into which they currently pay dues of some $20,000 a month—a move reminiscent of the cleavage that originally spawned the CIO.

But the withdrawal will be confined to internal actions. The building trades are disenchanted with the merger, more than ever, but they still see the merits of unity—if it can be achieved. Right now, however, they want it known that they don't like losing what they feel is their rightful territory and that a sacrifice of their traditional jurisdiction is an unreasonable price for unity.

It was with that in mind that the reorganization of the Building and Construction Trades Department—in the offing ever since the merger—was conceived. Department officials assigned the task of mapping out the plans to strengthen the building trades are three of their international presidents—L. M. Ritters, painters; Peter T. Schoemann, plumbers; and Peter Fosco, laborers.

Point-by-point, the building trades have found themselves on the short end of the score in these key areas:

• **Jurisdiction**—This perennial battle reached a crescendo at the Miami sessions with Gray claiming that the industrial unions—particularly the auto, steel and oil unions—had opened a campaign to freeze construction workers out of their rightful jobs. According to Gray, these unions have been pushing the use of no-contracting-out clauses in their contracts that require construction to be handled by production workers in industrial plants.

Leaders of the industrial unions concede their emphasis on no-contracting-out clauses, but insist this is an old practice. But the way they've handled it illustrates the thin line between the job jurisdictions which, basically, is that maintenance construction work goes to the industrial plant union, new building to the crafts.

But refinements of the contract clauses in an industry such as oil, for instance, include that no work shall be subcontracted out if the industrial workers are idle; that minor new construction be handled within the plant; that construction connecting new and old building be handled for safety purposes—by the workers already within the plant.

Apart from the numerous attempts to iron out the differences, a formal approach by AFL-CIO President George Meany also failed. The Building Trades Department, in a heated conference session led by the AFL-CIO teamsters, rejected the plan outright. The cornerstone of the Meany plan is establishment of teams of representatives by locality, one from each union, to tackle each jurisdictional dispute case as it comes along.

If these representatives fail to find the solution within 10 days, the dispute would go to an arbitrator with final and binding authority; the arbitrator would be picked by building trades and industrial union department presidents. Meany would make the choice if they couldn't agree.

The craft unions, however, rejected the plan on the grounds that it didn't spell out the craft union's chartered jurisdiction as a guide for the arbitrator. According to the Building Trades Department, the arbitrator, under the Meany plan, would have too much leeway in giving construction jobs to industrial unions.

One part of the Meany plan was directed at a current dispute that reached the executive council level on an appeal by steelworkers' President David J. McDonald. The steel union president charged that a boycott of goods worked on by his union members was being carried on by the sheet metal workers union.

This dispute, brewing for over a year, is now directed at more than a dozen plants organized by the steelworkers and United Auto Workers. The sheet metal workers, for example, are refusing to handle products of the Burt Manufacturing Co., Akron, Ohio, and the company claims the boycott has cost it $500,000 in business. McDonald charged that the action was a "blatant" violation of the AFL-CIO constitution.

The sheet metal workers, on the other hand, assert that this work, at Burt Manufacturing and other companies, rightfully belongs to them. The struggle is symbolic of the craft-industrial dispute that appears to be spreading rather than diminishing under the merger.

The Building Trades Department formally threw its support to the sheet metal workers in the dispute, principally in an attempt to dramatize the craft-industrial struggle. There seems little chance of a lasting compromise until a formula eventually is worked out for full settlement of the lingering trouble.

• **Atomic energy**—Another of the outspoken differences centered in the attempt by the United Auto Workers and other industrial unions to halt construction of the $45-million atomic reactor in Monroe County, Mich. The AFL-CIO Executive Council pre-

viously had given support to the UAW's appeal, made on the grounds that safety regulations were not sufficiently planned and the reactor could endanger the lives of persons in the adjacent communities.

Gray, in a letter to Meany during the Miami meetings, took issue with this opinion. He said his department was advised there was "doubt whether it would endanger lives in any manner or form" and he urged that the protest be rescinded and construction be allowed to go on without further action by the AFL-CIO.

This dispute, again, was symbolic of the craft-industrial split. Building trades unions working on the reactor construction haven't been pleased by the resistance put up by the UAW to the project.

• **Taft-Hartley**—The building trades' troubles over amending the Taft-Hartley Act can't be attributed to the industrial unions, though officials of the Industrial Union Department indicate they may again fight efforts to get such amendments passed by Congress if they reach that stage. It's been the contention of the building trades that the industrial unions use the law as a weapon against construction unions in carrying on jurisdictional warfare.

At the Miami sessions, the big argument was between committee members representing the building trades and contractors who met with Labor Secretary James P. Mitchell at the Miami conference site. No substantial progress was made and another session was scheduled.

The committee is hung up principally on the secondary boycott issue. The first conference developed a heated argument over craft union efforts to get agreement on the right to picket a construction site where there are contractors not involved in the dispute. The unions also sought a pre-hire contract agreement from the contractors.

The contractors, in turn, wanted to trade off—against the building trades proposal—an amendment that would permit employer associations to act as a unit against a union that may be striking one of its members. But, in the first Miami session, the hoped-for compromises never materialized.

• **State mergers**—Top-level AFL-CIO troubles also were reflected at the state level in the council sessions. At the call of UAW President Walter Reuther, CIO groups from half a dozen key states, including New York, New Jersey, Michigan and Ohio, appeared on the scene to protest the action of AFL building trades officials in those states.

The CIO teams complained that AFL state labor leaders were insisting on the two top jobs in the merged federation regardless of what the ratio is between AFL and CIO members in the state. This, they said, was holding up the merger, which still hasn't taken place in any large industrial states and now totals only 20 states in all.

But the principal cause of complaint was against the building trades unions—particularly the teamsters—for successfully blocking mergers in the key states. With time running out, pressure on state groups will increase; if they aren't merged by the end of the year, the AFL-CIO leadership takes over.

Concern over the failure to merge at the state level is especially strong since it limits the effectiveness of union operations politically—in state legislatures as well as national elections.

## Group Bargaining

### AGC chapter treated as employer by Taft Act

Some of the legal implications of multi-employer bargaining were further defined last month by rulings of the National Labor Relations Board and the Ninth Circuit Court of Appeals. Both cases involved chapters of the Associated General Contractors of America.

The NLRB ruled that a union could not get its bargaining unit enlarged to embrace employees of all roadbuilders in a state simply because most of the roadbuilders in the state eventually adopted the wages and working conditions negotiated by one multi-employer association. And the federal court held that a multi-employer association that negotiates for its members is a "person" and "employer" within the meaning of the law and may be jointly liable along with the offending member for damage suffered by an employee because of unfair labor practices stemming from the contract itself.

• **Bargaining unit**—In the first case, Operating Engineers' Local 49 advanced the argument that an appropriate bargaining unit would embrace all employees of all paving and highway contractors in Minnesota because the state AGC effectively sets the pace for wages and working conditions for highway work within the state. It said that the state's highway contractors are AGC members, that AGC rates are incorporated in state highway specifications, and that these are eventually adopted by all contractors doing highway work in the state.

The board could see no merit in the union's argument and dismissed the petition. "It does not appear," it said, "that all the contractors within the state unequivocally intend to be bound in collective bargaining by group action."

• **Association liability**—In the second case, the Seattle chapter of the AGC had balked at being treated as an employer by the NLRB.

The trouble stemmed from an unlawful union security clause in the contract negotiated by the AGC with the laborers union, which provided, in effect, that association members would give preference in employment to members of the union.

The E. E. Shuck Construction Co.—which was not an AGC member but whose president was hired a University of Washington student and then discharged him when the union wouldn't take him in. The action, resulting as it did from the AGC clause, was an unfair labor practice, said the NLRB, and the AGC, as guilty as Shuck or the union, is financially liable for the discrimination.

The Circuit Court agreed with the NLRB that the AGC is as susceptible to financial responsibility for damages flowing from the discharge as it is to a cease and desist order. And in dismissing the AGC argument that, even if it is a person or employer in the eyes of the law, it wasn't the employer here because it didn't order the discharge, or control Shuck's employment policy, the court said the AGC, by virtue of the clause itself, "in a very real sense" caused the student's discharge.

Three collateral points also were made by the court. The retention of the clause constitutes a continuing offense so that the statute of limitations doesn't run to cut off the right to bring suit; a contract "savings clause" to the effect that any provision held invalid is to be deemed inoperative is too vague to afford escape and doesn't become effective anyhow until after the matter has been litigated; a company that is not on the AGC membership rolls but that pays for the AGC membership of its president as an individual is a de facto member of the AGC.

**LOCATION:** Hallowell, Maine.

**OPERATION CONDITIONS:** Primary drilling of constant-gauge 4" blast holes, 30' deep, in hard granite.

# TIMKEN® carbide insert bits blaze Maine Turnpike trail faster, cheaper

## *. . . Reports H. E. Sargent, Inc.*

REMOVING rock for the Portland-Augusta Toll Turnpike and furnishing rock to be crushed for use in pavement, H. E. Sargent, Inc., had to drill fast through hard granite to stay on schedule. The firm used Timken® carbide insert bits for the job, and reports Timken bits increased drilling speed, gave better footage life, needed fewer bit changes.

In hard, abrasive ground like this, Timken *carbide insert* bits are most economical, give fastest drilling speeds. This is true also when you're drilling constant-gauge holes, small diameter blast holes, extremely deep holes.

However, where ground is such that full increments of steel can be drilled, Timken *multi-use* bits are most economical. With correct and controlled reconditioning, they give you the lowest cost per foot of hole drilled.

Whichever type of Timken bit you use, you'll be glad to know that the bits are interchangeable in the same thread series. And a wide range of different Timken bits fit the same drill steel. If the ground changes, you can switch bits quickly and easily right on the job.

The Timken Rock Bit Engineering Service can give you the benefit of over 20 years experience in recommending the best bit for the job. May we help you? Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO".

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

***your best bet for the best bit . . . for <u>every</u> job***

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# OFFICIAL PROPOSALS

*RATE:* The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

*CLOSING DATE:* Friday 10:30 A.M. for issue dated the following Thursday.

*SEND COPY TO:* Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, N. Y.

Bids: February 28, 1957.

## New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS: ALBANY, N. Y. Pursuant to the provisions of the Highway Law, Canal Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 28th day of February 1957, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects.

| County | Contract No. | Name | Miles | Type | Deposit | Estimated Cost of Work |
|---|---|---|---|---|---|---|
| DISTRICT No. 1, G. L. Nickerson, District Engineer, 535 Broadway, Albany 1, N. Y. | | | | | | |
| Essex<br>Rte. 9 | FARC 57 11 | Elizabethtown-Keeseville, Pt. 1, S.H. 8302<br>Project E 476 1 | 8.86 | Asp. Conc. Otpt. ...8.84 Mi.<br>Misc. Work ...0.02 Mi. | $70,000<br>Plans $25 | $1,237,000 |
| Essex<br>Rte. 9 | FARC 57 13 | North Hudson-Lake Mills, Pt. 2, S.H. 5042<br>Lake Mills-Newcomb, S.H. 5012 Project E 483 90 | 2.26 | 9" Conc. Conc. Pave. 24' Var. Wide ...2.21 Mi.<br>Asp. Conc. Otpt. ...0.05 Mi. | $45,000<br>Plans $15 | $115,000 |
| Orange<br>& Rockland | WS R 57 1 | Brick Weighing Stations No. 17<br>S.H. 5084 and No. 31, S.H. 5084 | 0.04 | 9" Conc. Conc. Pave. 12' Wide<br>12' Wide | $225<br>Plans $10 | 4,500 |
| DISTRICT No. 2, L. Kocharek, District Engineer, 100 No. Genesee St., Utica 1, N. Y. | | | | | | |
| Madison<br>Rte. 46 | PASH 57 4<br>FARC 57 14 | So. of Oneida-South Bridge-Conc. Otpt. to Munnsville<br>Ville, Pt. 1, S.H. 1048 Project E 660 5 | 1.81 | Asph. Conc. Pr. 1A | $26,000<br>Plans $15 | 470,000 |
| DISTRICT No. 3, W. Bonyun, District Engineer, Watertown Building, Syracuse, N. Y. | | | | | | |
| Onondaga | FAC 57 2 | Oak St. Syracuse-Van Duyn School Bridge | 0.01 | Pedestrian Overpass 5' Wide, 3 Spans 122' | $1,000<br>Plans $10 | 27,000 |
| Onondaga<br><br><br>

## OFFICIAL PROPOSALS

Bids: March 29, 1957

### Board of Management for the Port of Rangoon

Tenders for supply of Mechanical Handling Equipment

1. The Board of Management for the Port of Rangoon invites tenders for the supply of the undermentioned Mechanical Handling Equipment:

(a) Porters' Trucks.
(b) Platform Trailers of various load capacities.
(c) Tractors.
(d) Heavy Duty Diesel Industrial Tractors.
(e) Fork Lift Trucks of various types.
(f) Mobile Cranes of various lift capacities.
(g) Crane Weighing Scales.
(h) Aluminium Dockside Articulated Gangways of various sizes.
(i) Gate Pass Issuing and Cancelling Machine.

2. Tender documents consisting of detailed Specification of Equipment desired, Instructions to Tenderers, Form of Tender, Schedule (General and Special Provisions of Contract) and Form of Contract may be obtained from the office of the undersigned on payment of K 25 per set or from Gibbs Gillanders and Co. Ltd., King William House, 24 Eastcheap, London E.C.3, on payment of £5 per set, or from Messrs. Triquetta Abbott McCarthy and Stearns Engineers, 6 West 17th Street, New York, 6, N.Y. on payment of U.S. $15.00 per set.

3. Tenders must be submitted on the Board's Tender Form available as mentioned in paragraph 2 above in sealed envelopes addressed to:

The Chairman,
Board of Management for the
Port of Rangoon,
Post Box No. 1,
Rangoon, Burma

and marked "Tender for supply of Mechanical Handling Equipment". All tenders should reach the office of the undersigned not later than 12 noon on 29th March 1957 or posted to the above mentioned address sufficiently early to reach on or before the appointed time and date.

4. The Board does not bind itself to accept the lowest or any tender or to assign any reasons for rejection of any tender.

WIN PE
CHAIRMAN

Bids: February 26, 1957

### Power Authority of the State of New York

BARNHART-PLA...
TRANSMISSION PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF TRANSMISSION LINE CONDUCTORS
SPECIFICATION NO. PA-6-16
CONTRACT NO. TP-

NOTICE TO CONTRACTORS. The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture and furnishing of transmission line conductors for the Barnhart-Plattsburgh Transmission Project and delivery thereof, f.o.b. destinations, until 10:30 A.M. Eastern Standard Time, on the 26th day of February, 1957, at the Authority's office, 270 Broadway, Room 1305, New York, New York, at which time and place the proposals will be publicly opened and read aloud.

Bids will be received on aluminum conductor steel-reinforced (ACSR) cable for the transmission lines in accordance with the bidding schedule. Conductors will be installed by others. Delivery of conductors will be required starting September 1, 1957. The estimated quantities are:

218 miles 795,000 cm. 26/7 standing
21 miles 954,000 cm. 54/7 standing
23 miles No. 2/0 AWG 6/1 standing
11 miles 477,000 cm. 26/7 standing
16,500 feet 901,500 cm. 28/19 standing

Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineers, Chl. Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours; and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1305, New York 7, New York upon application and payment of a fee of Ten ($10.00) Dollars per initial set of contract documents and Five ($5.00) Dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate in accordance with the instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than ten percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Prequalification Date: February 13, 1957

### Board of Education — Bureau of Construction

Notice Re: Prequalification Forms for Contractors

NOTICE IS HEREBY GIVEN THAT The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 1243 Crescent Street, L.I.C., New York, will receive applications for prequalification of bidders from Contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

Playground development Public School 124, 126th Avenue South Conduit Avenue, 129th to 130th Streets, South Ozone Park, Queens.

Prequalification application forms will have to be secured and must be submitted to the Superintendent of School Buildings, Bureau of Construction, Office, 4th Floor, Room 407, 1243 Crescent Street, L.I.C., New York.

Bids when advertised will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors not now on file will expire on Wednesday, February 13, 1957.

WILLIAM H. CORREALE
Supt. of School Buildings
Design and Construction
Dated: January 25, 1957

## U. S. Government

United States Department of Commerce, Bureau of Public Roads, February 8, 1957. Sealed bids will be received at the Inter-American Highway Office, Bureau of Public Roads, Room 1008, General Services Administration Building, Washington 25, D.C., until 2 p.m., E.S.T., February 28, 1957, for the construction of Nicaragua project 5-A on the Inter-American Highway in Nicaragua, consisting of grading, drainage, selected borrow, base and other work. The project begins at Sebaco about 86 miles north of Managua and extends north for about 18 miles to Condega. The approximate quantities of the major items of work are: 1,288,000 cubic meters Unclassified Excavation, 500,000 cubic meters Borrow Excavation, 186,000 cubic meters Selected Borrow, Base Course, 21,000 cubic yards, Class A Concrete in Box Culverts, 365,000 lbs. Reinforcing Steel, 1,000 linear feet Nestable Bituminous Coated Corrugated Metal Culvert Pipe (from 24" to 72") (Bids will be accepted only from United States or Nicaragua firms with a satisfactory record of performance on highway construction in the United States or in Nicaragua. The need for progress payments, where progress payments may legally be made, will not be treated as a handicap in awarding a contract. Plans, Specifications, and Proposal Forms are available upon request from the address given above, or at the Inter-American Highway District office, Bureau of Public Roads, No. 262 Carlos Palazio Bldg., Calle 5a N.W., Managua, Nicaragua. This is a readvertisement with alternate bids. Approved: C. D. Curtiss, Commissioner of Public Roads.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DC-4864) will be received at Denver, Colorado, until March 7, 1957, for furnishing four 7-foot by 12-foot outlet gates with connectors and handling equipment for Vaquero Dam, Santa Maria Project, California. Delivery is desired within 240 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4824) will be received at Huron, South Dakota, until March 12, 1957, for furnishing labor and materials for 161- and 230-kv bolt additions to Sioux City Substation, Missouri River Basin Project, Iowa. Location near Sioux City, Iowa. Principal items are 2,560 cu. yds. excavation; 140 cu. yds. concrete; furnishing and erecting 165,000 lbs. steel structures; installing major equipment furnished by the Government; furnishing and installing miscellaneous materials and equipment; and other work. Completion time 450 days. For particulars, address Bureau of Reclamation, P. O. Box 957, Huron, South Dakota, or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

# EMPLOYMENT OPPORTUNITIES

*REPLIES (Box No.): Address to office nearest you*
*c/o The Publication Classified Adv. Div.*
*NEW YORK: P. O. Box 12 (36)*
*CHICAGO: 520 N. Michigan Ave. (11)*
*SAN FRANCISCO: 68 Post St. (4)*

### POSITIONS VACANT

**Civil Engineer-Estimator: for Industrial construction.** Approximately 10-15 years of both estimating and job experience. Salary open, position permanent. Located in Florida. P-3632, Engineering News-Record.

**Civil Engineers for design and construction** of municipal and industrial sewerage, treatment and water supply projects. Old established consulting firm in Midwest has openings in permanent staff. Please send full information and references. P-3869, Engineering News-Record.

**Soils Engineer—prefer man with MS in soils** about 1945 or 1946—to head up a design group in a firm of consulting engineers specializing in design of dams. Must be top-notch design engineer and supervisor. Salary open. Location Midwest. P-3942, Engineering News-Record.

**Assistant to Chief Engineer: Unusual opportunity** for qualified man with firm of consulting engineers in Pa. Candidate must be thoroughly experienced in design of highways, bridges and related structures and capable of directing staff. Please submit experience resume, references, salary requirements and availability. P-3914, Engineering News-Record.

**Design Engineer with estimating experience** to join organization of general contractor specializing in heavy industrial and commercial work in expanding Ohio valley area. State experience, age, salary requirements, references, and date available. Seabright Construction Co., 1201 Wood St., Wheeling, W. Va.

**Wanted . . . Heavy Construction Road Superintendent** to work for long established New England contracting firm operating in New York and New England. Salary commensurate with experience and ability. P-3963, Engineering News-Record.

**Estimators—General Construction!** Graduate Engineers, under 30, some experience, military active duty completed. Reply in full with references, recent photograph and salary required. Dondlinger & Sons Const. Co., Inc., Box 2033, Wichita, Kansas. Phone AMherst 53101.

**Permanent position available Engineer** capable visualizing, designing, drafting, costing, building and equipment, and production line layouts of four plant upstate New York canned food processor. Write P-3908, Engineering News-Record stating resume education and experience.

**Master mechanic, superintendent, and young** engineer wanted for well established organization specializing in foundation work in Eastern and Southeastern regions. Experience in cast-in-place concrete pile equipment and installation necessary. Fine opportunity for long-term employment for qualified personnel. Replies held strictly confidential. Send to P-3958, Engineering News-Record.

**Bridge Designers and Draftsmen with experience** for permanent positions. Forward full educational, employment and personal data with salary requirements. McCumber & Faber, 1824 North Fourth Street, Harrisburg, Pennsylvania.

**Supervisor for grading, soil moving, and related** lands—pipe work on highway jobs. Must be able to take full charge. Excellent opportunity. Write for appointment. P-3998, Engineering News-Record.

**Two sanitary engineering vacancies in state** stream pollution control work. Salary, $5,000-6,000. Two to four years' experience in sewage disposal or pollution control work required. Submit qualifications to West Virginia State Water Commission, 1709 Washington Street, East, Charleston 1, West Virginia.

(Continued on opposite page)

# EMPLOYMENT OPPORTUNITIES

**DISPLAYED**

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

**An advertising inch** is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

—RATES—

**UNDISPLAYED**

**$2.10 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.**

**Position Wanted ads take 1/2 of above rate.**

**Box Numbers**—count as 1 line.

**Discount of 10%** if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36. February 21st issue closes February 11th

## SALES ENGINEER

A major steel company has need for sales engineer to promote and sell fabricated products in New England states. Excellent opportunity for man 25 to 40 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan.

P-1808, Engineering News-Record
Class Adv. Div. P.O. Box 12, N. Y. 36, N. Y.

## EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to

Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

### *POSITIONS VACANT*
*(Continued from opposite page)*

**Graduate Civil Engineers not over 30 and** preferably single. Must have military training completed and interested in the building construction business, starting in the field. We offer opportunity for rapid advancement to ambitious, hard-working young men willing to accept responsibility. Starting salary $110.00 per week if inexperienced with higher wages for those with some experience. Send complete history data. Martin K. Eby Construction Co., Inc., 610 N. Main, Wichita 2, Kansas.

**Construction Superintendent: For firm en**gaged in heavy construction mostly highway structures and bridges. Permanent position for experienced man capable of complete field responsibility including layout, organizing construction crews and coordinating subcontracts. Salary $12,000. Advance as justified by performance. First job 18 months in New York City unit-price contracts in New York and bordering states). Write full qualifications, age and when available. P-1035, Engineering News-Record.

**Estimator or Quantity Surveyor wanted liv**ing in or near New York City to work at home on part-time or full-time basis. Qualifications must be: Accuracy with better than normal speed; experience to take off quantities for general contractors on large or medium-size buildings. We pay professional rates and will keep all answers in strict confidence. P-3852, Engineering News-Record.

**Chief Draftsman—Experienced in design and** detail of furnaces & mechanical equipment. Capable of organizing and supervising complete job through drafting room. Small organization, Midtown N. Y., permanent. P-3798, Engineering News-Record.

**Equipment Superintendent—Expert in heavy** duty equipment, management, repair and maintenance. To organize Spanish personnel on Spanish project two years to complete. Salary open. Contact Corbetta Cuyles, 1480 Edgewater Road, Bronx, New York, DA 9-6700.

**Engineering Assistant—City of Palm Springs,** California, $333-533 month, depending upon qualifications. Two years college education in preengineering plus three years experience in subprofessional municipal engineering work. Additional experience may be substituted for education and vice versa. Apply Personnel, City Hall, Palm Springs, California.

**Wanted: Construction Superintendent who can** take complete charge of Illinois Highway grading, paving and drainage projects. Give references and salary desired. P-1213, Engineering News-Record.

## Engineer . . . (Supervising)

For Water Supply
Distribution and
Purification System.
FOREIGN. Contract 2-3 years

**BROWN & BLAUVELT**
*Consulting Engineers*
468 - 4th Ave., New York, N. Y.
*LE 2-7581*

### *POSITIONS VACANT*

**Construction Estimator-Chief, takeoff and** pricing-all trades for G.C., government and private construction, good opportunity send resume. P-1196, Engineering News-Record.

**City Engineer Los Altos, California registra**tion as a Civil Engineer in the State of California; and five years of responsible experience in engineering, including some experience in public works administration. Inquire: Mr. John Hope, Chief Administrative Officer City Hall, Los Altos, California Closing Date: March 12, 1957. Salary $569 to $710 per month.

### *SELLING OPPORTUNITY OFFERED*

**Old established Brazilian Company, acting as** manufacturers' representatives selling on own account and otherwise, seeks first class exclusive representation in Brazil for bituminous machinery (Asphalt Plants and Pavers), Road-Rollers and Motor-Graders. Letters to Aragusaia Comercio e Importacao S.A. Av. Beira Mar, 200, Rio de Janeiro, Brazil.

### *EMPLOYMENT SERVICES*

**Salaried Positions $6,000 to $35,000. We** offer the original personal employment service (established 16 years). Procedure of high standards individualized to your personal requirements. Identity covered. Particulars—R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo 3, N. Y.

### *POSITIONS WANTED*

**Superintendent-Project Manager. Heavy con**struction all types 16 years experience. Cost and equipment conscious. Will relocate. PW-3960, Engineering News-Record.

**Superintendent Engineer—20 yrs experience-**all types roads-excavation structures-sewer & water lines. PW-3415, Engineering News-Record.

**Canadian Civil Engineer (McGill '26),** specialized in municipal problems, seeks a permanent responsible position with a municipality or private concern, located in the Southern States. Excellent administrative, professional and personal background. Now employed as a freelance municipal consultant. 54 years old. Member of the Corporation of Professional Engineers of Quebec. Full details on request. PW-4003, Engineering News-Record.

Continued on page 145

# STRUCTURAL
## ENGINEERS
## DESIGNERS
## DRAFTSMEN

Prefer several years or more experience in any of these fields:

# BRIDGES

**BUILDINGS**
**EXPRESSWAYS**
**HYDRO PROJECTS**
**TEST FACILITIES***

Will consider lesser experience with good educational background, including several recent graduates to round out a planned expansion program. Occasional openings for combination field men. These are permanent additions to our regular staffs.

We are professional engineers engaged primarily in design which covers a wide scope of practice. The variety and unusual charater for example, the proposed world's largest bridge project—offer excellent opportunity for professional development and advancement.

Immediate openings in our St. Louis general offices and occasionally in our San Francisco branch office. Confidential interviews can also be obtained at Washington, D. C., and Portland, Oregon.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Please write fully, including salary data, to

## SVERDRUP & PARCEL, Inc.

*ENGINEERS — ARCHITECTS*

915 Olive St. Louis 1, Mo.

*We are designers of the technical facilities for the Arnold Engineering Development Center, operated by our subsidiary, ARO, Inc.

# HIGHWAY ENGINEERS
# DESIGNERS

FOR OFFICE WORK IN ST. LOUIS ON HIGHWAYS
EXPRESSWAYS AND ASSOCIATED CIVIL WORKS

- *Permanent employment for qualified men*
- *Ample opportunity for advancement based on merit*
- *Generous transportation & moving allowances*

*Plus Employee Benefit and Retirement Plan, Paid Vacations, Holidays, Sick Leave. Blue Cross available.*

PLEASE WRITE FULLY TO OR INQUIRE AT

**SVERDRUP & PARCEL ENGINEERING CO.**
1134 LOCUST ST. ST. LOUIS 1, MO.

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## Highway & Bridge Engineers
## Designers & Draftsmen

Career opportunities for men interested in professional recognition.
Excellent working conditions and employee benefits including liberal retirement program.
Openings in Pennsylvania, Maryland, Florida, Mississippi and overseas.

Air Mail Resume TO R. L. SHAW, *Personnel Director*

**MICHAEL BAKER, Jr., INC.**
BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

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## HIGHWAY AND STRUCTURAL ENGINEERS - DESIGNERS - DRAFTSMEN

Several years' experience in highway or bridge design work preferred but not necessary if educational background is good.

This firm of Consulting Engineers is anxious to employ men who desire long range permanent work, who want to develop as professional engineers and who are eager to accept ever increasing responsibility.

Besides well developed training courses the company offers vacations and holidays with pay, sick leave, blue cross, free life insurance, overtime, moving allowance, and an employee profit sharing plan.

Positions in the above categories available in permanent company offices at Chicago, New York, San Francisco, Oklahoma City, Toronto, Buffalo and Sanford, Florida.

*Please reply giving experience record to*

**DE LEUW, CATHER & COMPANY**
150 NO. WACKER DRIVE *Engineers* CHICAGO 6, ILLINOIS

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## STRUCTURAL DESIGNERS

FOR HIGHWAY BRIDGE WORK

SENIORS and JUNIORS

Work in New York City and New Jersey

**BROWN & BLAUVELT**
468 Fourth Avenue, New York City
44 Cooper Street, Woodbury, New Jersey

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ENGINEERS DESIGNERS
DRAFTSMEN
TOP LEVEL JOBS
with leading companies

Positions in the fields of architecture, electrical & mechanical equipment, instrumentation & chemical process plants.

Also excellent opportunities and salaries for experienced men in designing of refineries, chemical & power plants, industrial & commercial buildings, highways. No Fee.

TECHNICAL DIVISION
PROFESSIONAL OFFICE
NEW YORK STATE EMPLOYMENT SERVICE
119 Fifth Ave., NYC OR 7-9100

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## McKEE NEEDS
- Structural
- Concrete
- Piping
- Mechanical

## ENGINEERS

Our Metals, Refinery and Industrial Divisions offer you wide choice of opportunity to make full use of your talents, with excellent prospects for promotion to supervisory, staff and executive posts.

Broad diversification of work in our three engineering divisions assures you permanent security of employment.

You can build a strong foundation for your future with McKee. For complete information on the McKee organization and the extra benefits this company offers you write for our folder "The Key to Your Future" or contact us by telephone.

**Telephone TOwer 1-2300, Cleveland, Ohio or write to Edward A. Kolner Arthur G. McKee & Company 2300 Chester Ave., Cleveland 1, Ohio**

**Arthur G. McKee & Company**
Engineering offices in
CLEVELAND, OHIO • UNION, N.J. • TORONTO, ONT.

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## BOWATERS
SOUTHERN PAPER CORPORATION
and
## BOWATERS
RESEARCH AND DEVELOPMENT INCORPORATED

South's largest and newest newsprint and pulp mills now receiving applications for the following permanent positions:

**DESIGN ENGINEERS**
**PIPING ENGINEERS**
**PULP MILL ENGINEERS**
**MILL AREA ENGINEERS**

Located in Eastern Tennessee Valley. Excellent recreational, residential facilities. Exceedingly favorable year around climate, near Chattanooga and Knoxville, Tennessee. Complete insurance, retirement, salary, and vacation programs. All applications treated in confidence. Reply immediately submitting summary of experience to:

## BOWATERS
SOUTHERN PAPER CORPORATION
Industrial Relations Department
Calhoun, Tennessee

## STRUCTURAL DRAFTSMEN

FOR HIGHWAY BRIDGE WORK

In New York City and New Jersey

**BROWN & BLAUVELT**

468 Fourth Avenue, New York City

44 Cooper Street, Woodbury, New Jersey

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## ENGINEERS - DESIGNERS - DRAFTSMEN

for work on

BRIDGES AND EXPRESSWAYS

Opportunity for continuous employment in our Louisville, Chicago, Cincinnati or Lansing offices for graduates or engineers with practical backgrounds. Overtime allowance, vacation time and insurance and retirement plan.

Please give detailed personal and experience record, three competent references and salary expected in first letter.

**Hazelet & Erdal, Consulting Engineers**

COMMERCE BLDG.

LOUISVILLE, KENTUCKY

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## ENGINEERS

Long established firm of consulting engineers with world wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

**HARZA ENGINEERING CO.**

400 W. Madison St. Chicago 6, Ill.

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## SAN FRANCISCO City and County

Immediate Employment Possibilities

VARIETY OF PUBLIC WORKS PROGRAMS

| | |
|---|---|
| Junior Engineer (Civil) | $460—$530 |
| Assistant Engineer I (Civil) | $500—$600 |

For Further Information and Applications Inquire:

**San Francisco Civil Service Commission**

154 City Hall

San Francisco, California

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## CONTROLLER-CPA

Able to step in & take hold of rapidly growing firm, consulting engineers engaged in international and national operations. Fringe Benefits.

**SALARY OPEN**

P-1216, Engineering News-Record, Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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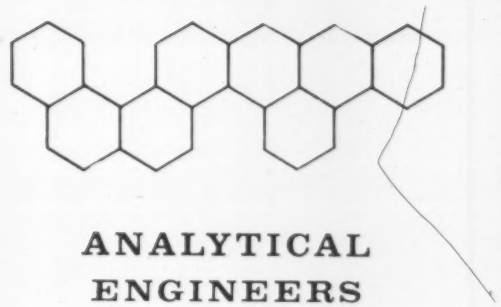

## ANALYTICAL ENGINEERS

At Hawthorne, in Southern California, Northrop Aircraft has a continuing need for experienced engineers seeking new opportunities. There are attractive positions open in the following fields: Aerodynamics, Dynamics, Thermodynamics, Stress, Loads, Performance Analysis.

In Northrop's superbly equipped multi-million-dollar engineering and science center, now nearing completion, you will be given constantly fresh and challenging assignments. Present programs include Northrop's new supersonic trainer airplane, the Snark SM-62 intercontinental guided missile, plus advanced aircraft and missile projects yet to be revealed.

You'll be associated with a high-calibre engineering team that has established an outstanding record in aeronautical design and development. Your initiative and ideas will be recognized, encouraged and rewarded, for at Northrop Aircraft the progress of personnel is as important as the progress of projects.

Besides attractive remuneration, you will enjoy other benefits unexcelled in the entire industry—retirement plans, health and life insurance, college educational reimbursement plan, regular vacations plus extra year-end vacations with pay. Easily-reached mountain, desert and beach resorts in sunny Southern California offer year 'round attractions for you and your family.

You will find the career opportunity you are seeking at Northrop, pioneer in the design and production of all weather and pilotless aircraft. If you qualify for one of these attractive positions, contact the Manager of Engineering Industrial Relations, Northrop Aircraft, Inc., ORegon 8-9111, Extension 1893, or write to: 1015 East Broadway, Department 4600-A, Hawthorne, California.

**NORTHROP**

NORTHROP AIRCRAFT, INC., HAWTHORNE, CALIFORNIA

Producers of Scorpion F-89 Interceptors and Snark SM-62 Intercontinental Missiles

5A-83

# ASSISTANT MANAGER

## FIELD INDUSTRIAL CONSTRUCTION

A large, established firm in the Far West has a unique opportunity for a man to supervise field construction work at several locations, mostly heavy industrial construction, totaling hundreds of millions of dollars annually. Some travel required.

The man who qualifies should be 40 to 50 years old, and now engaged, or with recent experience, *in this type of supervisory work.*

He will receive a most substantial salary; an opportunity to work in a mild, sunny climate, near excellent schools, cultural and recreational facilities. There are outstanding company benefits, including retirement plan.

Here is an exceptionally good chance to move UP with a widely-respected company. Write in confidence to

P-3952, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

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BECHTEL

## AREA ENGINEERS
## SENIOR ENGINEERS

**Foreign Employment**
**Saudia Arabia or Sumatra**

Field Engineers with refinery or related construction experience.

Office Engineers with heavy industrial construction experience on planning, estimating, costs, material takeoff, scheduling.

No Family Housing.

Send resume to:
Manager of Employment & Placement
Industrial Relations Division

**BECHTEL**
**Engineers, Builders for Industry**
220 Bush St. San Francisco, Calif.
Recruiting Offices in New York, Los Angeles, San Francisco and Houston

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## SUPERINTENDENT
## BUILDING CONSTRUCTION

Top flight man by growing company operating nationally. Give all pertinent data in reply including education, experience, salary, references and when available.

BLOUNT BROTHERS CONSTRUCTION CO.
P. O. Box 949 Montgomery, Ala.

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# ESTIMATORS

## *Building*
## *Mechanical*

Immediate permanent positions are available in our Cleveland, Ohio office for applicants who have an engineering degree or equivalent in design and/or field experience. In addition must have take-off and pricing experience on all types of industrial and commercial buildings, and/or mechanical installations.

These positions offer an opportunity to become associated with one of the country's foremost industrial engineering and construction companies. In addition to a good starting salary we offer excellent working conditions with paid vacations, sick leave accrual plan, and company-sponsored insurance plan.

All replies will be treated confidential and arrangements will be made to interview selected applicants. Please submit complete resume stating experience, education, salary required and date available to:

P-1183 Engineering News-Record
220 N. Michigan Ave., Chicago 11, Ill.

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**CIVIL ENGINEERS**

## Your training in Stress and Weight can bring you a rewarding career

**in Aircraft Nuclear Propulsion at General Electric**

If you've been thinking that the development of nuclear propulsion systems for aircraft is only a long time away, you've overlooked a chance to get into a fast-growing field with a wide-open future.

Your stress and weight experience and ability can be applied immediately to problems in aircraft nuclear propulsion because:

**General Electric gives you what you need to know about the nuclear applications of your field.**

... through a full tuition refund plan for university courses leading to an M.S. in nuclear engineering or any other graduate degree, and in-plant training courses conducted by the foremost men in the nuclear field ... on the job you'll work with experts who'll guide you in applying your present skill to the problems at hand.

**Comprehensive employee benefit programs**
**High starting salary**
**Relocation expenses paid**
**Periodic merit reviews**

*Send your resume in confidence, stating salary requirements, to location you prefer.*

J. R. Rosselot, P. O. Box 132, Cincinnati, Ohio
L. A. Munther, P. O. Box 1, Idaho Falls, Idaho

**GENERAL ELECTRIC**

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## PURCHASING ASSISTANT
## Wanted by General Contractor

Must be capable of taking over management of department upon retirement of present head in a few years. Location, midwestern Michigan. Enclose snapshot with resume of your experience to

P-1203, Engineering News-Record,
220 N. Michigan Ave., Chicago 11, Ill.

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# STRUCTURAL ENGINEER

For central engineering department of fast-growing Chicago manufacturing firm with large number of plants in U. S. and Canada.

Work being done includes buildings, from small additions to complete new plants, shops, warehouses, offices, and laboratory research facilities. Prefer graduate civil or architectural engineer to handle structural design of steel, concrete, and timber for such buildings. Desirable to have at least three years experience in engineering office with similar duties including checking of structural shop drawings and structural drafting.

Write Personnel Manager,
American-Marietta Company,
101 E. Ontario, Chicago 11, Illinois

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WANTED

# ENGINEERS

**in the fields of**

**BRIDGE DESIGN**
**STREET DESIGN**
**BRIDGE CONSTRUCTION**
**MATERIALS**
**PLANNING**
**(Chief Planning Engineer)**

POSITIONS AVAILABLE AT BEGINNING SALARIES OF $4480.00 — $5325.00 — $6115.00 — $7035.00 and $7570.00

POSITIONS LOCATED IN Washington, D. C. Area

EMPLOYEE BENEFITS: Retirement System, Paid Vacations, Sick Leave With Pay, Credit Union, Hospitalization Plan and others.

GREAT OPPORTUNITIES FOR ADVANCEMENT

*Write personal statistics, education, experience to*

P-1121—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

## POSITIONS WANTED
Continued from page 141

**General Manager Executive.** Heavy construction diversified foreign and domestic experience includes joint venture management of all phases, finance, planning, engineering and construction supervision; dams, tunnels, shafts, airbases, railroads, Power Plants, Bridges etc. PW-4061, Engineering News-Record.

**Sales Engineer: Experienced in specification** work with architects and engineers and sales to utilities, contractors, industrials, etc. Well acquainted Eastern Pennsylvania, Southern New Jersey, Delaware and Maryland. Have excreedable car. PW-4063, Engineering News-Record.

**Construction Supervisor (Mechanical) age 30** thoroughly experienced in the construction of steam heating, circ. hot water heating, sprinkler systems (wet & dry), pump houses, refrigeration, domestic plumbing etc. Desire a responsible position in Europe. Have completed two Foreign contracts. PW-4064, Engineering News-Record.

**General Construction Manager or Superintendent.** Practical background, bricklayer by trade. Operated own company thirty-five years. Past ten years grossed up to five million dollars per year mostly hospitals, schools, and housing in five hundred thousand to one and a half million dollar jobs each. Dissolved company. Decided to retire but find it is boring. Fifty-seven years old, excellent health, married, three teen age children. Need lots of action yet. Would like position as Assistant to President or General Manager of construction company with plenty of problems. Salary open and dependent on responsibilities assumed. Able to furnish best of references. PW-4066, Engineering News-Record.

**Chf. Estimator—B.S.C. 10 yrs. heavy con**struction bids, subs, payments, costs. P.E. license N. Y. and N. J. Prefer Metropolitan area. PW-4120, Engineering News-Record.

**Surveying field parties. 3 or 4 men, fully** equipped, well exp. in all types of work. Prefer licensed supervision. Willing to travel. PW-4122, Engineering News-Record.

**Equipment Superintendent with experience** and ability to handle large foreign jobs. Available March 1st. PW-4135, Engineering News-Record.

**Registered Graduate Civil Engr. age 32. Di**versified engineering background. Want employment with engr. or contracting firm with option to purchase in 1-3 years. Have capital to invest. PW-4141, Engineering News-Record.

**Project Manager-Superintendent. heavy &** bridge construction, 20 years experience, $200. PW-4152, Engineering News-Record.

**Licensed Civil Engineer-Attorney. 31. desires** legal position with construction firm. Engineering and legal experience. Outstanding law school records. PW-4129, Engineering News-Record.

**Civil Engineer. MCE. PE—6 years bridge ex**perience desires position in pre-stressed concrete field. Location: Southern California or Florida preferred. PW-4155, Engineering News-Record.

**Construction executive 28 years experience in** all phases of heavy and industrial construction, power plants, chemical plants, refinery installations, buildings, locks, dam and tunnels. Interested in connection with aggressive contractor doing lump sum contracts and negotiated sales work. Estimating and pricing accurate and construction methods current. Available at present time. Primary education M.E. Desirous of participating agreement. PW-4139, Engineering News-Record.

**Engineer Architect representative: General** Superintendent or project manager experienced in Air Field, commercial buildings, industrial and chemical plant construction; also highway, grading and drainage. Available on short notice for assignment domestic or overseas. PW-4083, Engineering News-Record.

**Structural Engineer—MASCE. BS. NY Li**cense, over 25 years in design and construction. Proven administrative ability. Fully qualified to supervise the design of industrial buildings, bridges and other structures. Available in 30 days. PW-4081, Engineering News-Record.

**Supt. or Project Manager available for work** in Florida or Georgia. Qualified and experience all phases. PW-4122, Engineering News-Record.

## POSITIONS WANTED

**General Superintendent with engineering back**ground, age 51, desires steady employment with reliable firm. Prefer work in main office but not averse to accepting field assignments. Resume upon request. PW-4154, Engineering News-Record.

**Private employment agency owner interested** in recruitment position with expanding engineering company. Age 28, available now. Five years agency experience. Write PW-4132, Engineering News-Record.

**Bid More Jobs without increasing overhead** Freelance takeoff estimates heavy construction N. Y. PW-4126, Engineering News-Record.

**Civil Engineer. 32. graduate. single. varied** experience of heavy construction, speak some Spanish, seeks foreign assignment. PW-4114, Engineering News-Record.

**Construction Manager—Office & Field Engr.** Grad. C.E. 15 yrs. responsible genl. contracting & consulting engrg. experience in bldg. constr. incl. estimating, contract negot'n, field supervision, new business, archt-owner relations. Available in 2 wks. for domestic or foreign assignmt. PW-4101, Engineering News-Record.

**Construction Superintendent. 43. past em**ployment includes earthwork, paving, housing, structures, sewers, land development engineering and cost. Offers along with 16 years practical experience in the above, the ability to assume responsibility, to work diligently in the companies interest, good habits, and pleasent personality. Desires connection with reliable growing Construction Co. at a reasonable salary. PW-4151, Engineering News-Record.

**Chief estimator—heavy construction. 15 yrs.**, pricing, closing with subs, on highways, bridges, pipelines, tunnels, sewers, marine work. Executive capabilities. Salary $10,000. Licensed PE 36 N.Y.C. L.I. etc. PW-4145, Engineering News-Record.

**Equipment Supt. or master mechanic 20 years** experience of maintaining light and heavy equipment—references. PW-4170, Engineering News-Record.

## POSITIONS WANTED

**Inspector of Materials—structural. PW-4193,** Engineering News-Record.

**Estimator. Extensive foundation and excava**tion background in heavy construction chiefly in New York area. Accustomed to responsibility. PW-4162, Engineering News-Record.

**German Civil Engineer. 30. graduated from** Technische Hochschule, Munchen, experienced in reinforced concrete construction, prestressed concrete, foundations, earth construction, salary wanted $500 per month, seeks position in the U.S.A. Write: Dipl. Ing. G. R. Schmiedl, Lipowskystr. 12, Munich 25, Bavaria.

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**Masters in Bus Admin. BSCE. seeks employ**ment in general mgt. of small or med. size constr. firm. Mid-south or Midwest pfd. PW-4159, Engineering News-Record.

**Superintendent. Field supervision. 25 years construction industrial, commercial, large** scale housing, institutional, etc., similar position desired with reliable organization. Will travel or relocate. PW-4215, Engineering News-Record.

## PART TIME WORK WANTED

**Part time work wanted—Detailing, checking,** designing structural steel. 11 years experience. Transactions by mail. Write PTWW-4174, Engineering News-Record.

## SELLING OPPORTUNITY WANTED

**Engineer, retired, own office, will sell to** builders, contractors, architects. RA-4027, Engineering News-Record.

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*(Classified Advertising)*

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*REPLIES (Box No.) Address to office nearest you*
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*Prefer without earthmoving service.*
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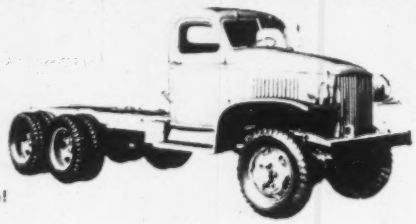

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DRAG CONVEYOR 80' centers with 15 x 5" cast flights.

ELEVATORS 40' Centrifugal and 90' open inclined.

HAMMERMILLS 42 x 24 Jeffrey "B", and Penna. S-6.

COLLECTORS Cyclone Dry type and Centrifugal Wet type. Both have 10,000 CFM capacity.

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Three Buda Diesel Generators Model 8DCSG-1125, powered by Buda Lanova Diesel Engine, Generator Century Model ARC-586-W, 60 cycle, 3 phase, 125 kva, 220/127 volts, 328 amps, complete with switchboard equipment including synchronizing equipment. All in good condition. To be sold as a unit.

Also, one Fuller-Kinyon Cement Unloader Type C225. This equipment may be inspected at our yard, Dayton, Ohio.

**Maxon Construction Company, Inc.**
**2600 Far Hills Avenue, Dayton 9, Ohio**

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CRAWLERS — Capacities to 60 tons, Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons, Booms to 130 ft.

P and H. Lima and Manitowoc.
Top-Condition erection cranes

**ROGER SHERMAN**
**CRANE SERVICE, INC.**
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Excellent Condition - Immediate Delivery - Write For Details.

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*PRICED TO SELL*

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One is a year old, top condition. One new Dec. 1, 1956, never used, 6 months' warranty.

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Built 1954, never used; complete: 54" w side cutters; AMSCO bucket, gooseneck boom. Will fit LORAIN 79, 80J, 820 and 82. Price: $7500.00.

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Excellent Condition

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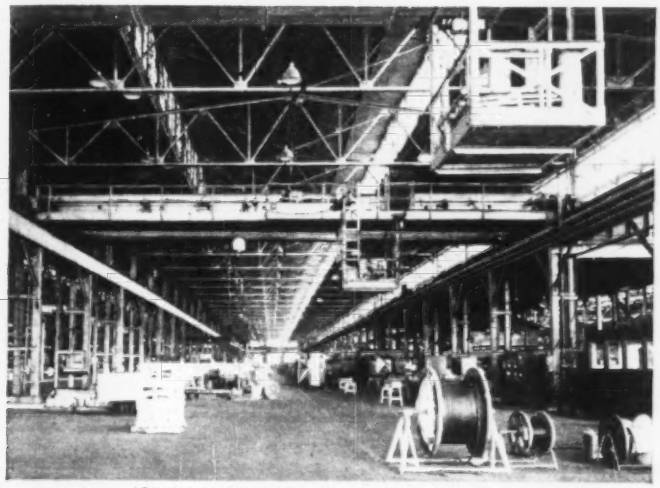

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From 10 ton to 70 ton capacity. 40 ft. to 80 ft. span. Immediately available. Sold either separately or with building structure. These cranes are cab operated, 230 volt D.C. operation. Several of these cranes have auxiliary trolleys.

**These buildings are ideal for practically any type of industry and are geared to efficient, economical operation. Divided to suit your specific requirements.**

- Length from 173 to 800 ft.
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- 89 overhead traveling cranes.
- Buildings completely covered with 10 to 70 ton cranes.
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30 ton Browning Diesel Loco. Crane. 1947.
65 ton Gen. Elec. Diesel Elec. Loco.
10 ton Plymouth Diesel Locos. Std. Ga. 1949
30 ton Wiley Stiffleg Derrick 80' Bm.
140 HP Amer. 3D ⌀140 Diesel Hoist & Swinger
30 ton American ⌀2 Guy Derrick 90' Bm.
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1600 ft. Joy Elec. Air Compressor 300 HP. New 1951.
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100 HP Lucey Portable Boilers. 200# WP.

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**WF-H BEAMS**
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**NEW • USED • IN STOCK**

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| 8" B P | 36# | 19/35' |
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| 14" B P | 73# | 60/65' |
| 14" B P | 89# | 60/65' |

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We assure you our prices will be the best obtainable.

**Call HY DRACHMAN**
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**DIESEL ELECTRIC LOCOMOTIVES**
STANDARD GAUGE
25 - 35 - 40 - 50 - 65 - 75 - 100 tons
*Write for Details*

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GOOD CONDITION D.D.P.C.U.
**$5000.**
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Clamshell Backhoe Combination
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Good Condition
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625 HP 3-60-2300 syn.

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DELL AVE. & 48th ST., NORTH BERGEN, N. J.
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BRIDGES: Deck Girder Type; 2 Girders each, 41 ft., 54 ft., 65 ft. and 75 ft.
ROAD ROLLERS: Huber 8 ton tandem and 10 ton, 3 wheel, gasoline powered.
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PORTABLE CRUSHING PLANT: Diamond model 66, diesel powered.
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BIN: 100 ton capacity, 3 compartment, 3 gates, for truck loading.
CAR SHAKER with jib crane, 1 ton chain hoist, 5 H. P. 220-440 volt motor. Condition guaranteed.
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WE BUY AND SELL EQUIPMENT THROUGHOUT NORTH AND CENTRAL AMERICA

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Used as Demonstrator for short time.
Excellent Condition.
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WAUKESHA GAS ENGINE
22" PADS, 12' 6" CRAWLERS
GOOD CONDITION $12,100
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New 1954 S N 25571 Cat. D13000 w hydraulic coupling 18' sticks; 23' boom. Excellent condition. $38,500.00.

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*SALE*

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| SIZE | PALLETS | JACKETS | LENGTH | TYPE |
|---|---|---|---|---|
| 8" | 201 | 2 | 4' | T & G |
| 10" | 144 | 2 | 3' | B & S |
| 10" | 100 | 2 | 4' | T & G |
| 12" | 195 | 2 | 4' | T & G |
| 15" | 152 | 2 | 4' | T & G |
| 18" | 155 | 2 | 4' | T & G |
| 21" | 132 | 2 | 4' | T & G |
| 24" | 130 | 2 | 4' | T & G |

PS-1206, Engineering News-Record
Class. Adv. Div., P. O. Box 12, NY 36, NY.

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| 110 | MP-115 | 35 to 60 ft. | Kansas City |
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CONMACO — PHONE DRexel 1-3930
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All Sizes in Stock
NEW—USED
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Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs.
*Special rates on long rentals*

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**1948 FORD TRACTOR & Pippin Hydraulic Backhoe**

36" Bucket Rear Tires 10.00 x 28
4.00 x19 Front Tires Excellent
Good Condition $1,600

EHRBAR EQUIPMENT CO.
U. S. Route 22 MUrdock 8-5000 Union, N. J.

*FOR SALE*

**1 New Wiley Whirley 20' Diameter Turntable 100' Boom**

3 Drum 10 x 12 Hoist
Independent Swing Engine
66" Diameter Vertical Boiler, Oil Fired
Steel Cab
*Complete for Barge Mounting*
*Completed about March 1, 1957.*

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**RAILROAD** Cross and Switch **TIES**
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## Better Late Than Never

THE ROCK SLIDE that crushed the Schoellkopf station of the Niagara Mohawk Power Corp. in 1956 made it almost inevitable that the State of New York and not the power company would finally harness the long wasting water at Niagara Falls. Last week the die was cast. At a meeting in Washington, Niagara Mohawk and New York State Power Authority representatives compromised their differences (ENR Jan. 31, p. 22) and agreed to support a bill that would give the Power Authority the right to carry out the $600 million development.

Thus ended the basic cause of six years of delay in providing needed power to U. S. customers. There also ended one of the most senseless fights the country has yet witnessed between public and private power advocates.

It will never be clear why New York's elected officials were so obsessed with the idea that only public power at Niagara would serve the public. The private power company, with long experience in power generation at the Falls, with access to ample money to carry out the development and operating under effective control of state laws, was ready and willing to go ahead six years ago. No better situation ever existed for Congress than in those lost six years to establish as policy that where water awaits development for power alone, private development—ready and willing—should be enabled to proceed. But the public power advocates were uncompromising, and to them belongs responsibility for the delay.

This unhappy episode in the struggle to develop Niagara is now happily ended. The Power Authority of the State of New York, grown to adequate technical stature for the job, thanks to its experience on the St. Lawrence power project, will handle it well. But the struggle is not yet over. One element of the compromise was to eliminate the federal type of preference clause for rural cooperatives and municipal electric systems. The fight now will center on that issue, now that the bigger issue of public vs. private power has been resolved. Senate Democrats already have introduced a bill that contains the preference provision. Yet in New York, two Democratic appointees on the State Power Authority reportedly have approved dropping of the preference clause.

The compromise is a good bill that comes six years late, but promises constructive progress. And it is better late than never.

## Use of Scientific Knowledge

THE RECENT RESOLUTION of the American Association for the Advancement of Science ended its meetings on a solemn note. The association's Interim Committee on the Social Aspects of Science reported that "there is an impending crisis in the relationship between science and American society. This crisis is being generated by a basic disparity. At a time when decisive economic, political and social processes have become profoundly dependent upon science, the discipline has failed to obtain its appropriate place in the management of public affairs. Scientists can play a decisive role: they can bring the facts and their estimates of the results of proposed action before the people."

Substituting the word "engineers" for "scientists" in the above quotation serves to bring home to the engineering profession its own responsibility in this matter. Along with other scientists, it has a duty to perform that warrants serious study.

But the AAAS committee did more than bemoan a bad situation. It set up a group of five definite objectives for which scientists should work actively. They are: (1) institution of a national system of radiation exposure record keeping for all individuals; (2) vigorous action to reduce medical exposure to X rays; (3) establishment of a national agency to regulate disposal of radioactive waste; (4) establishment of an international program of control and study of radioactive pollution of the oceans; (5) considerable relaxation of secrecy about dissemination of radioactivity. The committee also called for careful, integrated planning for development of atomic power.

At least two of these objectives—atomic power development and disposal of atomic wastes—are of special interest to engineers. Certainly they are subjects on which engineers, individually and through their technical and professional societies, should be able to help the public to get a proper understanding of what problems and risks are involved, to the end that any action taken by public bodies respecting them is sound.

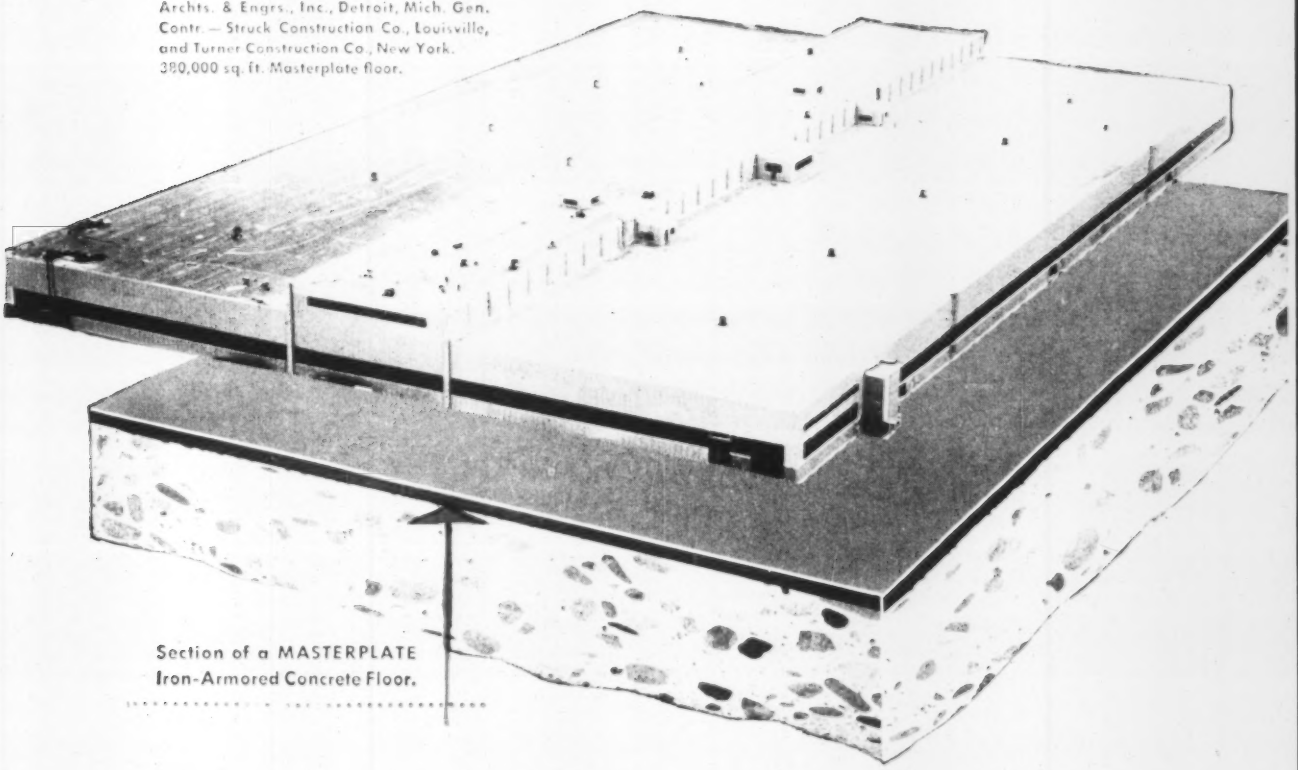
## Advice on Student Guidance

REALIZING THE NEED FOR ENGINEERS, now and in the years ahead, U. S. engineers are doing their part in the vital work of student guidance. And the following quotes would indicate not only that the problem exists abroad, but also that some solutions might be found there.

"At what age can or should a boy be influenced? It is by no means too early to start creating background influence about the age of 10 or 11 . . . Boys are influenced more by what is said at home than by what is said at school . . . Consequently it is important to keep up effective background advertising which reaches the home . . . It is essential to stress the professional status of engineering as a career . . . Boys . . . are very much attracted by professional status, and many who would still not want to go into commerce or industry would feel quite happy about the engineering profession, provided, of course, that it were referred to as such."

These excerpts are from an article in ENGINEERING, weekly London journal. They provide good advice for guiding students to engineering, here or abroad.

General Electric Appliance Park Warehouse, Louisville, Kentucky. Albert Kahn, Associated Archts. & Engrs., Inc., Detroit, Mich. Gen. Contr. — Struck Construction Co., Louisville, and Turner Construction Co., New York. 380,000 sq. ft. Masterplate floor.



Section of a MASTERPLATE Iron-Armored Concrete Floor.

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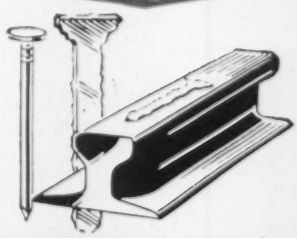

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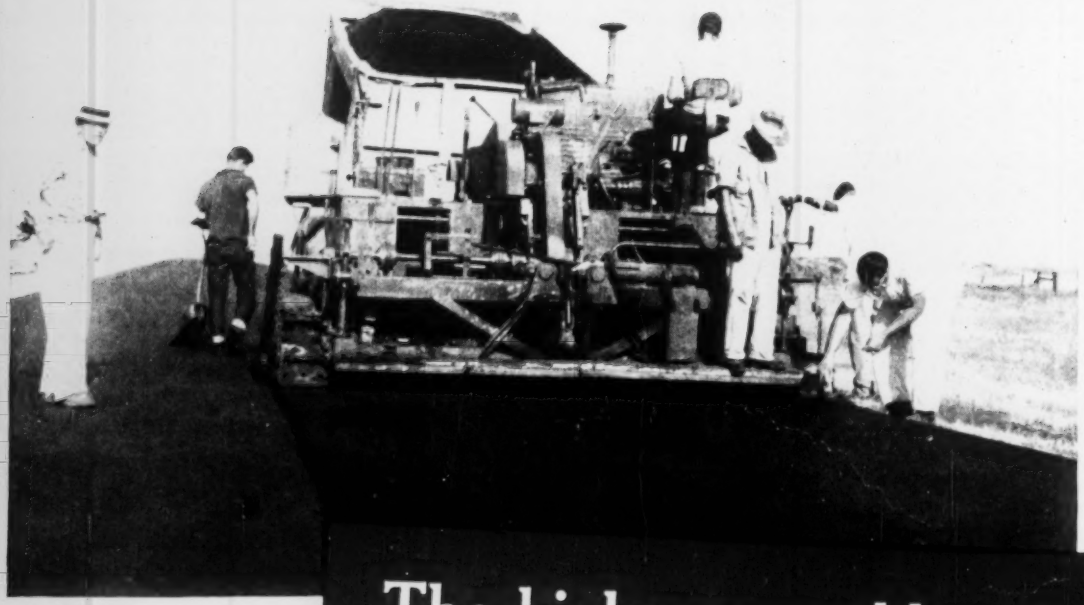

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# The highway problem here was a low-bearing-value subgrade

Texas is building a shorter highway link between Houston and Port Arthur's large oil refineries. A major problem in the construction of the 19-mile section shown here was the low-bearing value of the underlying subgrade.

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